CALIFORNIA ENERGY RESOURCES CONSERVATION

AND DEVELOPMENT COMMISSION

ENERGY EFFICIENCY COMMITTEE

WORKSHOP

DRAFT STANDARDS FOR RESIDENTIAL, NONRESIDENTIAL

AND OUTDOOR LIGHTING, AND

ACCEPTANCE REQUIREMENTS FOR NONRESIDENTIAL

LIGHTING

CALIFORNIA ENERGY COMMISSION

HEARING ROOM A

1516 NINTH STREET

SACRAMENTO, CALIFORNIA

MONDAY, NOVEMBER 18, 2002

10:10 a.m.

Reported By:

Peter Petty

Contract No. 150-01-005

COMMITTEE MEMBERS PRESENT

Robert Pernell, Presiding Member

Arthur Rosenfeld, Commissioner

Rosella Shapiro, Commissioner Adviser

STAFF PRESENT

Gary Flamm, Workshop Moderator

Bill Pennington, Project Manager

Mazi Shirakh

Elaine Hebert

Charles Eley
Lawrence Ayers
Eley Associates, Consultants

Jim Benya
Benya Lighting Design, Consultant

ALSO PRESENT

Noah Horowitz, NRDC

Charles Ehrlich, PG&E

Tom Trimberger, CALBO

Gary Farber, CABEC

Tom Tolen, TMT Associates

Neall Digert, Solatube

John McHugh, HMG

Lynn Benningfield, HMG

Harold Jepsen, the Watt Stopper, Inc.

Cheryl English, Aquity Lighting Group

APPEARANCES (continued)

ALSO PRESENT (continued)

Richard Bagni, Aquity Lighting Group

Kozell T. Boren, Signtronix

Robert Claus, Claus Cons

Michael Gabel, Gabel Associates

Mark Gastineau, Young Electric Sign Company

Jeffrey Aran, California Sign Association

Jim Cassie, CSOAA

Edward Gray, NEMA

Bruce Maeda

Leslie Davis, Auerbach and Glasow

Brian W. Maas, California Motor Car Dealers Ass'n.

Dawn DeGrazio, SMUD

Jack Melnyk, SCE

I N D E X

P R O C E E D I N G S

MR. FLAMM: Good morning, everybody. Welcome to our workshop today. We're glad to see all of you here. I'm going to start with a few housekeeping notes.

My name is Gary Flamm. I am the contract manager for the outdoor lighting segment of this workshop, and I'm also going to be the moderator today.

The purpose of today's workshop is to obtain public comments on the Draft Revisions of the Building Energy Efficiency Standards for Residential, Nonresidential, and Outdoor Lighting. We're going to have a short overview of the residential, followed by a period of questions or comments. Then we're going to have an overview of the nonresidential, and then this afternoon we'll have an overview of the outdoor lighting.

There are interest cards. Anybody that would like to make comments, I ask that you, these are on the back, but you can raise your hand and Elaine will bring them to you. And it would help us to organize this meeting.

This workshop is being Webcast. If you have any side comments to make, we ask that you go

outside to make those so that they are not Webcast. The Webcast will be live all the way through this afternoon, so it will be through lunch, if you're in here at lunchtime.

At this time I'd like to turn it over to Commissioner Pernell to make a few comments.

PRESIDING MEMBER PERNELL: Thank you, Gary.

Good morning. My name is Commissioner Pernell, Robert Pernell. I'm the Presiding Member of the Energy Efficiency Committee which is the committee that have oversight over the development of the '05 standards.

First of all, I'd like to introduce my colleague. To my left is Commissioner Rosenfeld, who is also on the committee. And to Commissioner Rosenfeld's left is my advisor, Rosella Shapiro.

Again, let me welcome you. I'm pleased that a substantial amount of work has been done, and so I want to thank staff for that. And also, those representatives from industry, the public sector, who also worked on these proposed standards, and came together and have some constructive suggestions for how we can improve them. And I think that's important. We've always

advocated for involvement in our process.

This workshop is the first step in a, to refine the draft standards, the ones that the staff has put out. Just a little bit about that, it's to refine the draft standards leading up to a rulemaking proceeding, we anticipate next spring, and, and to adopt the standards by the full Commission by the summer.

And with that, Commissioner Rosenfeld, would you like to have anything to say?

COMMISSIONER ROSENFELD: Nothing to add.

PRESIDING MEMBER PERNELL: Nothing now, but he will be engaged, as always, those of you who know Commissioner Rosenfeld.

At this time, I would like to turn it back over to Gary to, who's going to be the facilitator of this proceeding.

MR. FLAMM: Thank you, Commissioner Pernell.

Hopefully everybody has picked up an agenda in the back, picked up copies of the handouts, including the draft, too, of the Energy Efficiency Standards. If you haven't, please pick up a copy in the back.

We're going to try to stay within the

timeframe of the agenda. Before we start, I'd like to introduce, or have the rest of the project team who are here introduce themselves, starting with Mazi.

MR. SHIRAKH: Mazi Shirakh, a member of the Building Standards team for the CEC.

MR. ELEY: I'm Charles Eley, the main contractor of this project. We've had a number of important subcontractors. None of them are here right now, but it's Jim Benya, Lisa Heschong, Nancy Clanton, and RLW. Did I leave anybody out? That's it.

MR. AYERS: My name is Larry Ayers. I work with Eley Associates.

MR. FLAMM: Thank you.

And with that, I think what, Charles, are you ready to start? Are you ready to pull up his presentation? We're going to start off with the residential lighting, and Charles Eley is going to give a short overview.

MR. ELEY: Okay. Next slide, please. Or start that one, I guess.

MS. SHAPIRO: We need to do something about the lighting, because we can't see that.

MR. ELEY: Next slide, please.

The residential lighting requirements have all been, the main proponent of this has been Pacific Gas and Electric Company, but I don't want to, I want to acknowledge PG&E along with their contractor, HMG, as the main contributors to this, to this proposal.

There was a workshop on May 30th, when these ideas were first, first presented, and so what you're seeing today is, is substantially similar to what was presented on May 30th, with certain modifications resulting from comments at that time.

The requirements are intended to simplify the residential lighting requirements. They apply to kitchens, baths, and supports bases, tend to track and recess luminaires, luminaires in insulating ceilings and exterior luminaires.

Next slide, please.

The key to this entire proposal is a definition of a high efficacy luminaire. And so, so the requirements themselves simply say you must have a high efficacy luminaire in these applications. So what we mean by a high efficacy luminaire is, is a luminaire that has, if it's less than 15, if the lamp is less than 15 watts,

then the lamp efficacy must be 40 lumens per watt or greater. If it's between 15 and 40 watts, it's 50 lumens per watt of efficacy, and if it's more than 40 watts, then 60 lumens per watt of efficacy.

These thresholds are going to require either compact fluorescents or full, or fully fluorescent tubes, or I guess metal halide could be used as well. Lamps that, greater than 18 watts also have to have an electronic ballast, and those ballasts must comply both with the GMI and RFI standards.

So as we go through the requirements, keep in mind this definition of what we mean by a high efficacy luminaire.

Next slide, please.

In kitchens, the basic requirement is that permanently installed luminaires must be high efficacy luminaires. However, there is an exception that allows up to 50 percent of the lighting power in the kitchen to be non-high efficacy luminaires, provided that lighting is switched separately from the high efficacy.

Next slide.

In lighting in bathrooms and support

spaces, again there's a requirement that permanently installed fixtures be high efficacy luminaires. There's also an exception for these spaces for luminaires that are controlled by a manual on, automatic off motion sensor. So this is, this is perhaps a slightly different kind of motion sensor than is sometimes used. A lot of, lot of motion sensors, when you enter the room the lights automatically come on. But that type of motion sensor would not qualify for this, for this exception.

Next slide, please.

Pendant lighting, this is lighting that's suspended from the ceiling by a cord or a rod, track lighting, and recessed luminaires must all be high efficacy luminaires, or, if they're in spaces other than kitchens and baths, non-high efficacy luminaires could be used provided they're controlled by a dimmer. So you could still use halogen lighting in the dining room and the living room, provided it's controlled by a dimmer.

Next slide.

When, when luminaires are recessed into an insulated ceiling, there's two requirements. The first requirement is that they be of type IC.

This means that the metal housing is manufactured in such a way that the insulation can be placed in direct contact with the luminaires. Common luminaires require that there be a six-inch gap between the insulation and the luminaire. So the first requirement is that it be type IC.

The second requirement is that the luminaire be airtight. And when there's a pressure difference of 75 pascals, maximum leakage through a luminaire cannot exceed two cubic feet per minute. And the test procedure that's referenced here is ASTN 8283.

Next slide.

And then for all exterior lighting, this would include porch lighting or building mounted lighting outdoors, must be high efficacy. And there's three exceptions to this. The first is for lighting that's controlled by a motion sensor. Many of these luminaires have an integral motion sensor with them, and those, those could be halogen lighting. There's a second exception for lighting that's used in or around a swimming pool or water features. And the third exception is for low voltage wiring less than 50 watts per luminaire. This final exception is intended to

address the small mushroom luminaires that are sometimes used around in walkways and, and that sort of thing.

And that's it. Thank you, Gary.

MR. FLAMM: Thank you, Charles.

At this time I'd like to entertain comments from anybody that would like to make comments. I've received two cards on the residential lighting. If anybody else would like to make comments on the residential lighting, please raise your hand and Elaine will get a card to you.

When you do make comments, if you're sitting at the table, please speak into the microphones. Identify yourself every time you speak, and then make your comments. If you're sitting away from the table, please come to the lectern and identify yourself, and make your comments.

And I'd like to start with Noah Horowitz, from NRDC.

MR. HOROWITZ: Good morning. I'm Noah Horowitz with NRDC. We're very, very supportive of the changes that are contained in here, and with one minor exception would hope it goes forth

as is, and I'll get to that point.

We think these are big improvements over the current standard. We believe the current standard has a lot of unnecessary trade-offs and causes a lot of conference calls just to define what a bathroom is. I'm glad we've taken care of that. The key areas, kitchen, bath, and exterior lights, we're handling, and I think that's great.

Charles, one thing I'm not so clear on is why we have the low voltage exclusion on the outdoor lights. As I understand it, the code doesn't include landscape lighting, so this seems to add an unnecessary loophole.

MR. ELEY: Well, the intent there was to deal with the, this was recommended by Jim Benya, I believe, one of our subcontractors. Jim is supposed to arrive momentarily. Maybe he can address that better than me. But it was intended to address the small low voltage lamps that commonly are installed along walkways.

MR. HOROWITZ: Great. I guess my question is, as I read it I thought the landscape lighting wasn't part of the code.

MR. ELEY: No, landscape lighting would be included.

MR. SHIRAKH: We should check that. But I think Noah has a point.

MR. HOROWITZ: Okay. And lastly, I think you've added a lot of flexibility to the code that I think the builders should be happy with, as well. And everybody wins in these cases. You say okay, you can use a less efficient fixture, but if you're going to do that let's try and limit the hours of operation, so the manual on, automatic off is a great compromise.

That concludes our comments.

MR. FLAMM: Thank you, Noah.

I have comments from Charles Ehrlich, from Pacific Gas and Electric.

MR. EHRLICH: Yes, thank you. This is Charles Ehrlich, PG&E.

As one of the co-authors of the original version of this section on mandatory measures for lighting, I noticed in your slide, Charles, that you, the language is slightly different. You said ceiling mounted luminaires, I just want to clarify that in the code it says explicitly, pendant, track, and recessed luminaires, not just all ceiling mounted luminaires. I, I don't know how many different types of ceiling luminaires there

might be, but I just wanted that to be clear. That's pretty important.

And also, following after Noah, the exception number 3 to the outdoor lighting requirement, I think is unnecessary. In the definition of exterior lighting, section 6, 150, luminaires providing outdoor lighting and permanently mounted to a residential building or its surrounding structures shall be high efficacy luminaires. That, when I read that, I don't read that that includes walkways and paths.

And there's a whole other section of the code where outdoor lighting really would cover that. And I think any kind of exceptions or regulations over pathway and other exterior lighting ought to be relegated to that, that whole other part of the code, and not part of the mandatory measures. That's our recommendation.

And that's it. Thank you.

MR. FLAMM: Thank you, Charles.

Tom Trimberger, from CALBO.

MR. TRIMBERGER: Good morning. Tom Trimberger here, representing the California Building Officials.

I really like a lot of this. It cleans

up language that we've struggled with for kitchens, what can and can't be accepted or exempted. I like the 50 percent, it is very manageable. A couple of things I want to talk about.

Part of it, I think your slides were, I was a little confused when you talked about ceiling mounted. And I understand that ceiling mounted, if they're flush up to the ceiling, the intent is they're not regulated, but if they're pendant mounted, they would be regulated. I'm, is there a definition between the two?

MR. SHIRAKH: Charles, can you answer that question?

MR. EHRLICH: Yeah, if I may. This is Charles Ehrlich, PG&E.

The requirements basically cover all permanently installed luminaires. So that's, if you look at, you know, part number 2, lighting in kitchens, permanently installed luminaires. Part number 3, bathroom and support spaces, permanently installed luminaires. So that's all luminaires. Number 4 is in addition to permanently installed luminaires in those two rooms. Throughout the home, we're targeting track, recessed, okay.

MR. TRIMBERGER: Yeah, I, I understood all that. In a bedroom, if they choose to hard wire a ceiling mounted luminaire, it's not regulated if it's ceiling mounted, but if it's pendant mounted, track or recessed, it's regulated. Is that correct?

MR. EHRLICH: Yes, I would say that's correct.

MR. TRIMBERGER: Okay. So then in the bedroom I have to define what is a pendant versus what is a surface mounted. Is --

MR. EHRLICH: You know --

MR. TRIMBERGER: Sometimes, if it looks like a duck and quacks like a duck, it's a duck. Sometimes, it's hard to tell. Is there any other guidance to that?

MR. PENNINGTON: I have a question. Charles, can you explain what the rationale is of not covering, not having this requirement relate to surface mount?

MR. EHRLICH: Charles Ehrlich, with PG&E, again.

The concern was that it would be difficult to justify cost effectiveness throughout the home for all different types of luminaires.

Pendants and track and recessed luminaires were ones that we found that they typically had excess wattage, wattage that was easy to target, for reducing the total impact on the home. A surface mounted luminaire typically does not have a lot of wattage in it. So that was our, that was our justification behind it.

I think we could put in the residential manual a very clear description of what a pendant is versus a surface mounted, if that would work for you. I think that would work.

MR. TRIMBERGER: Okay. That might, that would probably do it.

What about a dining room chandelier? It doesn't specifically talk about chandeliers. Is that a pendant?

MR. ELEY: It would have to be dimmed.

MR. TRIMBERGER: Okay. The other point I wanted to make, the low voltage wattage that, for exterior lighting. I kind of like having it here rather than in the exterior lighting portion. I've got, you know, two pages that talks about everything residential for lighting. I like having it here. There's a lot of stuff coming up on exterior lighting for building officials to

deal with, or stumble over, if that's an appropriate analogy. So I kind of like having it in here as just another place to see it.

Those are my comments.

MR. FLAMM: Okay. Thank you.

Gary Farber.

MR. FARBER: Hi. I'm Gary Farber, representing CABEC, California Association of Building Energy Consultants. And I've got a couple of questions, and I'd like to follow up with a comment after a little discussion about these comments, I mean, these questions, possibly.

We haven't had a lot of time to digest all of this, but I was kind of curious. First of all, when it comes to track fixtures, what was, how do you see enforcing that when it's not really the track, it's the, it's the track head exterior that -- and the track head I would assume is often not installed at the time a permit is issued, possibly just the track itself. And I'm kind of curious how you see, you know, field enforcement occurring with a track.

MR. ELEY: They would have to do it with a dimmer.

MR. FARBER: It has to be -- oh, are you

talking about the -- okay, that has to be on the dimmers.

COMMISSIONER ROSENFELD: The dimmer ap;lies to the whole track; right?

MR. ELEY: The dimmer, yeah. You dim the track, not each individual fixture on the track.

MR. FARBER: Well, okay. But number 4 says it has to be high efficacy luminaire.

MR. ELEY: Unless, but it could be with the exception.

MR. FARBER: If it's not, then you put the dimmer. So then what you're saying is that if the high efficacy track heads are not installed at the time of the field review, then the alternative is to have the dimmer.

MR. ELEY: Yeah. I guess you're raising kind of an interesting issue. I mean, someone could say oh, well, I've got this empty track and I'm going to use all high efficacy luminaires on it.

MR. FARBER: Right. That's what I'm wondering, is how you're actually going to solve the enforcement of --

MR. ELEY: We probably ought to just

require that all tracks have dimmers, I guess.

COMMISSIONER ROSENFELD: Charles, I have a technical question. These track lights are always incandescents, right?

MR. ELEY: They're -- excuse me?

COMMISSIONER ROSENFELD: The track lights are always incandescents?

MR. ELEY: They don't have to be.

COMMISSIONER ROSENFELD: So there are some on the market which, which are high efficiency?

MR. ELEY: Yeah.

COMMISSIONER ROSENFELD: Okay. Got a good point.

MR. PENNINGTON: It seems to me, on that point, it's the, there can't be a showing that these are high efficacy clearly, that the building official can see, then they'd have to be dimmed.

MR. FARBER: Okay. And --

MR. PENNINGTON: So if they don't have their fixtures, they have to be dimmed.

MR. FARBER: Then a follow-up would be what constitutes, if meeting the requirement of high efficacy, in other words, you've got an eight foot track and they install one or two high

efficacy track heads, is that enough?

MR. PENNINGTON: I don't think so.

MR. FARBER: So it seems like we need to pin this down a lot more, you know.

MR. PENNINGTON: Agreed.

MR. ELEY: You've raised a good issue, and I think we do need to clarify this.

MR. FARBER: The other question has to do with kitchen lighting, and, I mean, we're considering a new requirement where up to 50 percent of the installed wattage can be incandescent, or some other sources not high efficacy. And where we're saying implementing that, were we saying forms similar to non-residential, or actually listing exteriors and wattage and also how are we going to regulate what the wattage is on screw-in type fixtures.

MR. FLAMM: This is Gary Flamm. I think there are, there are going to be forms to address that. And there are already, in the nonresidential area, the definition of how you determine wattage. And I would assume that that's going to be carried across residential, also.

MR. FARBER: Okay.

MR. FLAMM: And so that's a good point

that we need to make that clarification.

MR. FARBER: Right. In the nonresidential, there's one more thing. On the nonresidential, I think it talks about the standard is the A base, but halogens are exempt from that minimum, and I'd just like to clear that up, that there should be a minimum assumed wattages for halogen, as well as standard incandescent.

MR. FLAMM: So you're talking about like candelabra base, or --

MR. FARBER: Right, basically any type of incandescent source. They all would, I think, need to have a minimum assumed wattage.

MR. FLAMM: Okay. I'd like to, Charles raised his hand. Charles.

MR. EHRLICH: Yeah, Charles Ehrlich, PG&E. Gary, your comments that you brought up seem like they could all be addressed in the manual, how it's implemented, some very clear questions. One of the basic assumptions that we used in coming up with this language was based upon where the industry is right now. We didn't go with screw-ins for a very good reason, which is that there was concern by many people that those

would walk. Too hard to say that that's a permanent measure.

But second, second of all, dimmable compact fluorescents, dimmable high efficacy luminaires are not commonplace yet. They will be very shortly. We could not write the code assuming that, at this point. So it might, it does sound a little bit strange that, you know, just put a dimmer on it and you don't have to do this exception, but that, we had to be careful not to require that you put a dimmer on a high efficacy luminaire because that could cause a fire hazard. So we're dancing a careful line there.

Then regarding your second question. What was it regarding?

MR. FARBER: Kitchen lighting. Can I respond to your first?

MR. EHRLICH: Sure.

MR. FARBER: The first, as far as, but I think the point I was bringing up is when is that dimmer requirement triggered. That's -- that wasn't really clear. You know, in other words, what constitutes having met the requirement of a high efficacy fixture before the dimmer is required, especially when it comes to a track and

track heads might not be installed.

MR. EHRLICH: The definition of high efficacy says that all lamps, any fixture, would have to be high efficacy.

MR. FARBER: Correct. But again, when the track is installed the track heads may or may not be installed. Are we going to need to pin down that, since that, the track heads have to also be installed at the time of the inspection, how many, is one enough. That was just --

MR. EHRLICH: I think a track, a track luminaire would include all the fixtures, all the heads attached to it --

MR. FARBER: Okay.

MR. EHRLICH: -- as one luminaire. That's my understanding.

MR. FARBER: Okay.

MR. FLAMM: I think that's a good issue, and I think that we hear it, and we do need to discuss this further. And I'd like to move on from that, if we could. But, yes, that's a good point, and we should discuss that further.

Noah, you have a comment?

MR. HOROWITZ: Yes. Noah Horowitz, NRDC.

In terms of counting the fixtures and the wattage, it's, and I want to make sure we're all in agreement, it's the rated wattage. So it doesn't, the can or fixture could be rated for 100 watts, if they put in 50 watt bulbs it's 100 that the calculation is done on. Were you questioning that, or just didn't see that, maybe?

MR. FARBER: I guess I, yeah, I didn't notice, read it, but --

MR. HOROWITZ: So a form would be very important to help make all this work, I agree.

MR. FARBER: Right. I know in my experience -- this is Gary Farber, again -- in my experience in doing counseling for compliance, and I'm not sure it would be the same, whether we see this thing the same with kitchen calculations and this form, but I would think it's not unlikely that this form for kitchen lighting may be completed by the same people who are doing energy compliance for the house, if it's a new house, or an addition. And it's very, very unlikely that at the time that the energy consultant is preparing a form, that the fixtures are even selected. We can ask the designer or client to give us, I guess, what they consider to be the maximum rated

wattage, but frankly, a lot of them just aren't going to know at that time, so.

MR. FLAMM: Okay. If I could turn it over to Commissioner Rosenfeld, first.

COMMISSIONER ROSENFELD: No, mine's a different question.

MR. FLAMM: Oh, yours is a different question. Okay, Charles.

MR. EHRLICH: Yeah, again, Charles from PG&E. We chose a requirement that would be easy to verify in the field, with your concerns and mine, that typically residential homes do not have lighting plans submitted, and they don't have the fixtures picked out. So 50 percent of the rated wattage is very easy to verify in the field by simply looking at the can, as it's accessible, or the pendant, or whatever the fixture is. So we don't think the forms would be necessary. I would encourage us to move in that direction, to start requiring lighting plans, but that's not now. We're not doing that.

MR. FLAMM: Okay. Those are all good points that I think will need further discussion after this workshop.

Commissioner Rosenfeld.

COMMISSIONER ROSENFELD: I have a question for Charles, just on English. You have this table of lamp efficiency requirements. We're discussing luminaires, but you have just the lamp efficiency requirement. I would have thought that it would've been the product of the lamp efficiency times some sort of luminaire -- efficacy is what I meant to say. I'm worried about just a really crummy luminaire can.

MR. ELEY: It's a good point. We used, we used lamp efficacy as opposed to system efficacy just for simplicity of code compliance, because the building official can look on the lamp, they can see the lamp watts, and this would give the lumen output that would, that's also available.

It's a good comment. I don't know, did you guys, when you guys made this recommendation, Charles, did you look at the efficiency of the luminaires in this?

MR. EHRLICH: Yeah. The problem with including luminaire efficacies is that there's no standard testing and labeling, you know, industry group that labels fixtures or luminaires with efficacy. So there would be, again, no way to

field verify this. I think it's important.

COMMISSIONER ROSENFELD: Do they in fact vary a lot from can to can?

MR. EHRLICH: Yeah. In fact, black baffle downlights are intentionally inefficient so that you don't have a lot of glare from the side. So, yeah, so there's also design esthetic involved in the efficiency of that luminaire that we don't want to be regulating, I don't think.

MR. FLAMM: Okay. Mazi.

MR. SHIRAKH: I think Charles answered one of the comments I was going to make. Basically, this was an improvement. The existing standards only requires lumen efficacy of greater than 40 lumens per watt, period. It doesn't vary with the lamp wattage and so forth, so we tried to improve it in that area. But the reasons we didn't go to fixture efficacy or luminaire was just, Charles was mentioning, it would an enforcement problem and it varies too much from luminaire to luminaire.

COMMISSIONER ROSENFELD: And then I, it's okay. I have another sort of English question. I don't have it front of me, Charles, but on the first switch you have, this is

kitchens, for example, you have a certain number of allowed watts of high efficiency; correct? And then you said you can add 50 percent.

MR. ELEY: What it says it that up to 50 percent can, can be non-high efficacy luminaires.

COMMISSIONER ROSENFELD: Okay. Just let me try again.

MR. ELEY: Fifty percent of the watts.

COMMISSIONER ROSENFELD: Supposing we had 100 watts on the first switch, 100 watts of fluorescent. Then when you say 50 percent can be additional incandescent, does that mean another 100 watts or another 50 watts?

MR. ELEY: Another 100 watts. But it has to be on a separate switch.

COMMISSIONER ROSENFELD: So 50 percent of the total.

MR. ELEY: Fifty percent of the total.

COMMISSIONER ROSENFELD: You'd better put it the words, "of the total", I guess.

MR. ELEY: Okay, let's clarify that.

MR. FLAMM: Thank you.

Tom Trimberger. I'm sorry, the other Tom. Tom Tolen. I should read my card.

MR. TOLEN: Thank you, Gary.

MR. FLAMM: I was looking at Tom Tolen.

MR. TOLEN; Tom Tolen, with TMT Associates.

Question on the, when it's, when the motion sensor requirement is triggered, requiring a manual on, which I, I heartily approve, but I'm curious as to whether or not market availability is there yet on that product. As far as I know, most products that are available have a setting that can be adjusted, and it can either be manual or automatic. So it'd be hard for you guys to verify, for one thing. And secondly, it could still be set on automatic, and my experience is that automatic settings sometimes use more energy than simply one off control.

MR. FLAMM: Okay. I believe PG&E did a market assessment on that.

MR. EHRLICH: Yeah. Charles, again, with PG&E. The manufacturers of the motion sensor devices all said that they have one, maybe a limited availability, but one product that does meet this criteria, and that given a code, could very easily provide more by the 2005 enactment date. So whatever basically we want.

MR. TOLEN: Okay. Just to follow up on

that, is it going to be easy to field verify whether that's the case for the, the plan checkers and inspectors?

MR. EHRLICH: I'm thinking right now about the requirement for programmable thermostats, where it says this approved by Title 24. I don't see a problem with seeing a similar labeling --

MR. TOLEN: Okay. I had --

MR. EHRLICH: -- in conjunction.

MR. TOLEN: -- one other minor issue. Five, 7 and 9 watt compact fluorescent lamps. Do they meet the 40 lumens per watt?

MR. SHIRAKH: I'm sorry, say that again?

MR. TOLEN: Five watt, 7 watt, 9 watt compact fluorescents. As I recall, the efficacy on those is about 30, 35.

MR. AYERS: This is the lamp itself.

MR. TOLEN: Yeah.

MR. AYERS: No problems.

MR. PENNINGTON: It's my understanding that the lamps do, if you don't consider the power factor, because we weren't looking at that. I could be wrong on that.

MR. TOLEN: Just, I would request you

double-check that.

MR. PENNINGTON: Yes.

MR. TOLEN: It's been a problem before.

MR. ELEY: That's, that's the intent, anyway. I believe the numbers are set to include those, Tom.

MR. TOLEN: Okay. Thanks.

MR. FLAMM: Okay. Any additional comments on the residential standards? Noah.

MR. HOROWITZ: Noah Horowitz, NRDC. One minor one. I just want to know where it plays out. Ceiling fans, often that's the fixture that's put in a bedroom, and you could have two, three, four, five of these, and they often have five heads coming out which have incandescents. There are Energy Star rated ceiling fans that have good lighting right now, and I'm wondering if fans would be included. If not, I think the definition of pendant or a separate category should be in there. Anybody have a sense how the fan would play out, if it has lights with it?

MR. ELEY: I think if it's, if it has lights, it's a pendant mounted luminaire, and it's covered.

MR. HOROWITZ: Okay.

MR. ELEY: We're not regulating anything about the fan, though. That might be a --

MR. HOROWITZ: No, I understand. That's why --

MR. FLAMM: Okay. Somebody over here have their hand -- Gary Farber.

MR. FARBER: I wanted to throw out another, an idea on residential to capture a lot more lighting that is currently not regulated, and isn't currently proposed to be regulated, and I'm not representing CABEC at this point. It's something that our organization is considering, but at this point we haven't come to a conclusion.

But personally, I think the Commission ought to consider changing the current regulation of multi-family, low-rise and high-rise, and incorporate the great bulk of what's currently under the multi-family low-rise into something similar to the current high-rise standards, so that all of the common area lighting would then be captured and regulated. And I think basically what that would take to make that work would be to adjust the ACM so that buildings with individual systems would be compared to a standard, you know, building with individual systems, or if they're

central it'd be compared to central, similar to low-rise residential now.

And, and then the glazing requirements would have to be looked at, whether they be appropriate. But I don't really feel that that is a, you know, a large amount of work, and I think the benefits would be pretty large, and you'd be able to capture a large amount of, again, currently unregulated lighting. Bring that into the, into the regulations.

COMMISSIONER PERNELL: So, let me understand what, your suggestion is to change the definition of multi-family single story and --

MR. FARBER: Right. Well, currently, high-rise residential are defined as buildings four stories or greater, you know, and fall under the regulations that include all common area lighting. And compliance under performance approach is done under, you know, go to compliance and where lighting can be modeled. Or if it's prescriptive, you know, it falls under the prescriptive lighting requirements. Anyway, it's regulated.

Multi-family, three stories and under, common area lighting is not regulated in any way.

And you could develop a prescriptive only, you know, requirement for low-rise multi-family. However, that would not give you the option of dealing with the lighting on a performance basis. And, personally, I just don't see that there's any strong reason to have this demarcation, that four stories. I see, you know, four, five, six story buildings that are very similar to low-rise, in terms of unit size, glazing, mechanical system type, you know, all of that. So I, I just think that, you know, we kind of need to focus more on just a large, larger scale multi-family, regardless of the number of stories, and regulate this lighting, and probably come up with a better means of regulating the buildings, anyway.

You know, give another for, this isn't lighting, but another example of where the current standards don't really deal realistically with, in low-rise residentials, that air conditioning efficiencies are only regulated in terms of SEER and not ER. And yet a lot of larger low-rise multi-family have larger systems that are, you know, large, you know, seven and a half tons or greater. So the low-rise residential standards in several ways just don't quite fit, you know, the

reality. And I think we can come up with a, you know, a standard that would capture some of that and, and regulate the lighting.

And I was thinking that we might have a cutoff, maybe 20 units, you know. In other words, 19 units or under would fall under what is currently the low-rise residential standards, and 20 or more, or something in that order, would fall under what, similar rules to what is now high-rise residential.

MR. FLAMM: Okay. Thank you, Gary.

Cheryl English, if you're online, I can't see if your hand's raised. Do you have any comments on the residential?

MS. ENGLISH: I don't have any comment, thank you.

MR. FLAMM: You're welcome.

Okay. At this time then, let's move to the --

COMMISSIONER PERNELL: I've got just a couple.

MR. FLAMM: Excuse me. Commissioner Pernell.

COMMISSIONER PERNELL: Two comments. Commissioner Pernell.

On the, on the landscaping lighting that was brought up as a comment, to perhaps put it into the residential codes, I think it's, you know, I think it made sense, because it's something certainly we should look at.

And then the other is just clarifying. It appears that there's a lot of comments about clarifying the language in the standards, so I think that's also something that collectively we should be looking at. And as I understand your, your comment about the multi-family is changing the definition of a multi-family dwelling so that you can capture the common lighting space in those units?

MR. FARBER: Correct.

COMMISSIONER PERNELL: Okay.

MR. FARBER: In what's currently low-rise multi-family, where it's not regulated at all.

COMMISSIONER PERNELL: Right. And that's something, obviously, we can take a look at, as well.

MR. FLAMM: Okay. Thank you, Commissioner Pernell.

Okay. At this time, then, let's move to

the nonresidential lighting, and Charles Eley is going to make another presentation.

MR. ELEY: Okay. The slides are up on this. Next slide, please.

There's several important changes that we've made to the nonresidential lighting requirements, and these are all, these are all interior lighting that we're talking about this morning. This afternoon we'll talk about outdoor lighting.

The first thing is that we have a new compliance method, and I'll talk more about that in a minute. It's a prescriptive method that doesn't require that we calculate allowed lighting power. We've modified the lighting power density, or the lighting power allowances for the whole area, and the complete building. We've simplified the tailored method. There's a requirement for daylighting skylight area for large spaces. And there are, and there's a new set of requirements for -- acceptance requirements for lighting controls.

Next slide.

The common lighting systems is contained in 146A, and this is a new compliance option. It

does not require that you -- all the compliance options presently require that you know the area of your space and that you determine the lighting power allowance and watch for square foot. You multiply those two together and you come up with an allowed lighting power. The common lighting systems are predetermined to achieve a lighting power density of less than one watt per square foot. They do this by specifying luminaire type, lamp watts, and spacing for common luminaires. All of this is contained in Section 146A.

This is new to Title 24. We think it will simplify the compliance process for a lot of building types.

Next slide, please.

We have made a number of adjustments to the lighting power allowances. These are the watts per square foot of allowed lighting power. These are made to Tables 146C, which is the complete building table, and 146D, which is the whole area. There's, there's two advances in lighting technology that have driven most of these changes. The first is the, our super T8 lamps, with improved ballasts. And the second are the availability of pulse start metal halide lamps.

So those two technologies together have driven down the lighting power densities for a number of building types, and whole area categories.

I'm not going to go through each of those, but if you look to Section 146C, or tables 146C and D, you can see what those are. The values that are changed are, of course, underlined.

MS. SHAPIRO: Charles, please say that that's on page 124 and 125, so that people can --

MR. ELEY: Thank you, Rosella. Those are on page 124 and 125 of the --

MS. SHAPIRO: You didn't have to actually say that.

(Laughter.)

MR. ELEY: Thank you. Next slide.

Another significant change which is to Section 146C of the standard, is to simplify the tailored lighting method. The tailored lighting method has always been used, I guess mainly for retail spaces, but for other spaces, as well. There's a couple of things that we've done to try and simplify it. There's a new table in that section that lists all of the space categories that are in the whole area table. And for each

one of them it lists, it identifies which of the lose it, or use it or lose it allowances are applicable to that, to that space type.

The, the changes in the simplified tailored method are intended to be literal in terms of allowed lighting power, and Mazi's done a number of calculations, I think, that demonstrate that that's the case.

Next slide.

There's a Table 146B which has the lighting control allowances or adjustments, has been modified to include bi-level control credits in three new applications. These are hallways in hotel, motels; storage stack areas in large commercial and industrial warehouses; and library stacks. So these are, these credits have been added to Table 146B, and they could be used in lieu of reducing lighting power.

Next slide.

This credit, along with the previous one, were, have been developed and proposed by PG&E and their main consultant, HMG. So I want to give them credit for both of these.

There's a new requirement that applies to large spaces under, that are bigger than 25,000

square feet, and have at least 15 foot ceilings. In such spaces, at least half of the floor area must be daylighted under a skylight. So we're actually requiring skylights in warehouses, manufacturing facilities, and certain other areas.

The luminaires in these spaces that are located within the daylight zone must have automatic multi-level daylight controls. Don't have to be dimming controls, but they need to be multi-level daylight controls as defined in the standard, and they have to be automatic. The automatic part can be provided by photo cells or an astronomical timeclock.

MR. GABEL: What, Charles, what pages are the size? Is this mandatory or prescriptive?

MR. ELEY: This is the next, this is in Section 143C. And it's prescriptive.

MR. GABEL: Prescriptive. It's not mandatory.

MR. ELEY: No, it's not mandatory. It's prescriptive, 143C. That's on page --

MS. SHAPIRO: The table's on page 92.

MR. ELEY: Page 92, thereabout.

Section 143C also defines a minimum skylight area in these areas, and it also has

several requirements for the thermal and, and visual performance of the skylights. The skylights have to, of course, meet the U factor and SHGC requirements in the envelope requirements, but they must also diffuse the light as it enters the space. So you would not be able to comply with this requirement with clear glazing.

Okay. So I see that John McHugh is here, and I'm sure he can answer questions that you have about this, this requirement.

Next slide.

Next there's a new appendix to the nonresidential ACM manual called NJ 2005. And this has a number of new acceptance requirements for code compliance. A portion of these acceptance requirements apply to lighting controls. And the standard requires that a certificate of acceptance be submitted to the building department that certifies that plans and specifications meet the performance requirements of the standard, that's Part 6, certifies that automatic lighting controls meet their appropriate sections, and that manual lighting controls meet the requirements of 131. So this is, most of

these acceptance requirements actually apply to HVAC equipment, but there are some that I want to call your attention to here that apply to lighting controls.

Next slide.

I want to recognize that Jim Benya, who's the main technical contributor to this section, Jim, did I leave anything out, or any points that you want to make? I guess not.

MR. BENYA: No, I can't think of anything at this moment.

MR. FLAMM: Thank you, Charles.

Okay. I have three cards so far. If any -- okay, Elaine's going to pick up. Anybody else that would like to make comments, please fill out a interest card, and Elaine will deliver one to you and pick it up, and we'll make sure everybody is called upon.

And first, Cheryl English, do you have comments?

MS. ENGLISH: I do not have any comments. Thank you.

MR. FLAMM: You're welcome.

Michael Gabel. I couldn't read your last name.

MR. GABEL: Okay. Sorry.

Mike Gabel, representing CABEC with Gary Farber today. Gary will address some specific detailed issue for CABEC. I have some general comments.

Charles Eley has mentioned that the intent of the new lighting compliance methods and the tailored, new tailored methods are essentially to be energy neutral at the current standards. And I think we'd all find it very comforting if --

MR. ELEY: Just the tailored.

MR. GABEL: Just the tailored. Okay.

MR. ELEY: Just the tailored's energy neutral.

MR. GABEL: Okay.

MR. BENYA: Quite a few of the sections are new requirements.

MR. GABEL: Okay. In that regard, it would be reassuring if the consultants and staff could develop two or three examples that were designed to try to find differences, if they existed, and work those through, publish those so that we can, other people can try to work those through to see if we get similar results.

MR. FLAMM: Okay. Mazi?

MR. SHIRAKH: I, I did prepare an Excel spreadsheet, and I believe I sent it to you and Gary, where I analyzed nine different occupancies. It was, retail was one of them, grocery, church --

MR. GABEL: Is this very recently, or was this a few months ago? This is the most recent?

MR. SHIRAKH: It was when, I believe about two months ago.

MR. GABEL: Okay.

MR. SHIRAKH: When all the --

MR. GABEL: None of those has changed in light of the more recent language of the standard?

MR. ELEY: The numbers haven't changed.

MR. SHIRAKH: The numbers really haven't changed. But, you know, again, in R9, I developed models based on the existing standards and the proposed standards, just to verify what you're saying, make sure that.

MR. GABEL: Okay.

MR. SHIRAKH: And I must add that the comparison is a little bit difficult because the current standard has some open ended allowances in it, whereas the proposed standard has very high caps on everything. So, but the conclusion was

that in most cases, the nine that I analyzed, most of them showed substantial reduction compared to the existing method. A couple of them were below, not significantly, but still below the current one.

MR. GABEL: The other thing is that, I mean, if it turns out that we had under the current standards essentially three compliance paths, and now we're going to have five, my only concern, because we have the new one that was listed, plus we have two -- we've now five different paths you can take. And my only concern is that some of them look at the, well, it's the path of least resistance, is what I'm concerned about there, whether it's going to just philosophically encourage more gaming, but it's more of just a general comment.

MR. SHIRAKH: May I?

MR. GABEL: Yeah.

MR. SHIRAKH: The first one, the new one, and I'll let Jim comment on that one, but that's, the intent is to give you not more than one watt per square foot. So, you know, it's hard to game that one.

I guess when you're talking about five

compliance methods, you're talking about tailored A and tailored B --

MR. GABEL: Right.

MR. SHIRAKH: -- as two different ones. Although we explicitly broke it into two different methods, you can still do both of them under the existing tailored structure. So even though it's new, it's not really new.

MR. GABEL: Okay. Let's see. I guess the other general comment is that historically, this is alluding to what you were saying, Mazi, that there's been a lot of subjective interpretation to the lighting standards. And because the nature of the, it's the nature of the beast. There's an inherent aspect of lighting design and compliance which is somewhat interpretational, I would, a lot of people would argue. And I guess my hope is under these set of standards, that we can do as much as possible to make the standards as deterministic as possible, so that however we frame that, people have less ways and sort of interpreting their way to a higher energy usage through use of these different methods.

So that's my final comment.

MR. ELEY: We agree.

MR. FLAMM: Thank you.

Gary Farber.

MR. FARBER: Gary Farber, representing CABEC. A question about 143C, the prescriptive skylight requirement. How does that fit into performance compliance? Will the ACM consider in the standard building design that the standard building will have skylights and have lighting controls on the lighting?

MR. ELEY: Yes.

MR. FARBER: Okay. That sounds like it'll be an interesting project to define the lighting systems, how much watts there are that are controlled, and that kind of thing. Because the amount of light, the amount of light, well, I guess you've got an absolute requirement what the skylight sizes are, and that would lead into, then, the, the exact number of watts of controlled lighting. So you wouldn't see that as being a problem implementing it? I mean, has there been consultations with the people that are doing --

MR. ELEY: Well, it's going to be tricky, but it's doable. We haven't written the nonres ACM yet. We hope to have that done in a

month or so. And this is, this is one of the many challenges that we will face as we write the document.

MR. GABEL: I see.

MR. FLAMM: Thank you, Gary.

Dr. Neall Digert.

DR. DIGERT: Digert.

MR. FLAMM: Digert. Thank you.

Good morning. Yes, I'm Dr. Neall Digert. I am Technical Director for Solatube International.

I certainly applaud the Commission's development requiring daylighting square footages in buildings. I think that is certainly the way to go to increase energy efficiency in the state of California. However, in reviewing the new codes, there are some new and growing technologies that are not supported. And so currently, the code is missing reference to an important, significant rolling and highly efficient new type of skylight. That is, the new category is tubular daylighting devices, or TDDs, which are an optical daylighting system.

Section 143C provides standards for skylight use in nonresidential buildings.

However, figure 143A, which provides a well efficiency nomograph on page 105, only supports typical non-optical skylight well systems. In order to support the use of the new TDD technology, a supplemental specular nomograph would need to be added, and can be acquired from research by the NFRC, which is to be completed as of December 1st of 2002.

Just to kind of outline what the difference is. When we start to look at an optical system, where we have optical materials that are being used to more effectively transmit daylight into a space, we are using a very small aperture. Currently, the largest in the industry is 21 inches in diameter. For a very standard tube run of only six feet, we, if my math is correct, as I just calculated it now, we are looking at a well cavity ratio, a WCR as defined in the standard, of 34.4, which, first of all, falls well off of the existing chart. And then also, we are looking at optical specular reflectances, so it's the mirror-like reflectance of light, with new technologies, again, which have just been launched this year, of over 99 percent.

So, as a result, for a tubular skylight

with this highly reflective tubing, we could have a well efficiency of over 90 percent, with a tube run of six feet or more. Whereas now, using the current nomograph, essentially it becomes asymptotic. As the bulk heavy ratio grows we'd be looking at an effective efficiency of less than 20 percent. So we would exclude a significant new technology from the market.

So I ask that you take a look at that.

COMMISSIONER PERNELL: You -- this is Commissioner Pernell. You said the technology will be available --

DR. DIGERT: The technology is existing, and actually has been applied to many, many buildings throughout California. In fact, the CEC currently supports the use of the technology through rebates. The current load reduction program. However, it is a new technology to the market. It was actually developed in '87, has become very prominent here in the United States, probably over the last five years.

The biggest problem that the industry has seen is that the NFRC has been slow to recognize this new category of skylights, and actually within the last year has finally started

to develop the testing and rating protocols. So the, the research that I referenced is actually research that the NFRC has supported, in order to determine rating protocols for solar peaking coefficients and tubular, or and visible light transmittance for TDD systems.

COMMISSIONER PERNELL: But I'm just trying to fix on a date that you said NFRC will have a report out at, and --

DR. DIGERT: Exactly. The research, the final report is to be issued actually by November 30th, so the end of this month. But with the way NFRC goes, you know, that may slip a little bit. But the, the main issue is that you will have some industry supported data to utilize in the new standards, so I would certainly ask that you consider that.

MR. FLAMM: Charles.

MR. ELEY: Does this NFRC procedure, does this provide a procedure for calculating well index?

DR. DIGERT: It actually --

MR. ELEY: And well --

DR. DIGERT: What it actually is producing as part of the research is essentially a

nomograph, just as you have, but for specular systems with varying surface reflectances, for different tube runs, for tube runs.

MR. ELEY: We need to, in the standard, we need to make reference to standards that have been adopted. Do you know when NFRC plans to adopt this, or if they plan to adopt it as a standard?

DR. DIGERT: The, at this point, provided the research is completed at the end of this month, the intent is for a rating standard to be proposed at the January 15th meeting. Which then the NFRC would review, the appropriate committees would review and vote upon. But certainly, at a minimum, I think that the new standard, since this is the 2005 standard, it does need to reference these new technologies because they are a growing market, and are much more efficient than the standard traditional rectangular skylights that we have today.

MS. SHAPIRO: I agree.

MR. FLAMM: Thank you. John, do you have any comments on that?

MR. McHUGH: Yeah. Actually, I have a few questions for Dr. Digert.

MR. FLAMM: Identify yourself, please.

MR. McHUGH: This is John McHugh, with the Heschong Mahone Group. And the NFRC testing, is this the testing that's occurring up at Queens University?

DR. DIGERT: No, it's actually being done, it is a simulation and optical, optical simulation work that is being done by the Florida Solar Energy Center, and the University of Central Florida.

MR. McHUGH: And is there any test -- actual physical measurements for calibrating these? I assume they're ray tracing the --

DR. DIGERT: They are doing detailed ray tracing data, exactly, John, and they, actually they have been studying various tubular systems, looking at physical products. But there is also, as of last week we should have some test data from Light and Services, Inc., in Scottsdale, Arizona, where we've actually had some skylights tested, as well. Light and Solar, thank you.

MR. McHUGH: And when you mention the NFRC tests, you're also talking about SHGC tests, as well as visible transmittance?

DR. DIGERT: Visible transmittance, that

is correct.

MR. McHUGH: And the SHGC tests, as it relates to that, as I remember it's in a residential format where the insulation is at the ceiling plane rather than at the roof deck?

DR. DIGERT: That, that is, well, that is correct for the residential model. Now, NFRC is also going through, that is the industry standard, so all tubular skylights will be rated based on a 14 inch product. That is what NFRC has determined as the standard size for the industry in general, just as for the glazing industry it's a four by four glazed product. So that is the standard.

So at this, at this moment that is correct, John. However, now that that standard is in place, they are reviewing the development of a commercial sized rating protocol, as well.

MR. McHUGH: Right. NFRC typically has a residential size and a commercial size. However, what I think is important to note, and I brought this up to the NFRC testing committee, is that especially with what's proposed for the 2005 standards, where in general nonresidential buildings will have the insulation up at the roof

deck, as opposed to at the ceiling level, the effect on SHGC is very significant. The tests that we have done with Tait Solar in Tempe, Arizona, found that a significant amount of heat goes sideways through the light well, and so that any tests NFRC might think about having for SHGC would need to take a look at the total --

DR. DIGERT: Sure.

MR. McHUGH: -- heat gain into a commercial building.

Also, related to this, you had mentioned a well efficiency of 90 percent or more. As part of the PIER research, we did similar types of research and found substantially less well efficiency. And we, of course, in reviewing the NFFC work, would want to, one, review the, how that relates to the work done for PIER, admittedly with square, but also take a look at how the simulations relate to the test results.

DR. DIGERT: Sure.

MR. McHUGH: A very small, as someone who has developed ray tracing models, I know that a very small change in the reflectance, small changes in the components of specularity, have a tremendous impact on the overall well efficiency.

And I congratulate you on this work in that. I sent an e-mail to you, I believe it was about six months ago, saying that this was an important issue.

DR. DIGERT: Yes. Absolutely. This is, and certainly it, having NFRC recognize the product category has been critical. And you are absolutely right, the minute changes in specular reflectance do have a significant impact. Most likely the products that you are looking at, up until recently the most reflective surfaces available have a specular roof component up by no more than 92 percent, which meant that with every bounce from a ray of light you lost eight percent of the light, or more. However, new technologies have recently been released which are now providing over a 99 percent specular reflectance, so less than one percent of the light is lost with each ray.

There's very, there's a lot of robust bi-directional reflectance data now available for the entire solar spectrum, so it is very easy to calculate.

MR. FLAMM: Okay, thank you.

Bill Pennington.

MR. PENNINGTON: Just one comment related to this particular technology. The information from NFRC and all of this testing and stuff is coming in extremely late, relative to this proceeding. And I think it's going to be quite challenging to figure out how, based on that information, even if it's reference-able, as Charles was pointing out, figuring out how that relates to the, you know, exhaustive work that John has done to develop this skylight proposal.

I wouldn't rule it out, but it seems like it's going to be extremely difficult to do that within the time that remains. We may need to look for making sure there's enough flexibility for us to deal with this as a compliance option after the fact, or something like that. I'm not sure what our options are. But --

DR. DIGERT: That would be great. Absolutely. I'm available to help in any way I can.

MR. ELEY: One other, if I could make one comment. I think the types of buildings that the, the application of the TBDs is typically for spaces where there's a plenum, you know, six feet, ten feet, you know. The kinds of buildings that

we're anticipating this requirement applying to we don't think will have ceilings.

DR. DIGERT: Actually, that's not necessarily true, as we have seen it. A lot of the large retail establishments clearly fall underneath these guidelines. Target is a very good example. You have a 97,000 square foot floor plate --

MR. ELEY: Which is a --

DR. DIGERT: -- about eight foot plenum space. So that would certainly be a key building type. Grocery stores are another one. Even the smallest grocery store will have a floor plate exceeding 27,000 square feet. And those, too, will have suspended ceiling systems.

MR. ELEY: Good point.

DR. DIGERT: Okay. Also, just to make a note, these products do work very well for hi-bay applications, as well, so ceilings of 30 feet or more. The nice thing about the product is that it can be used just as you would a piece of electric lighting equipment, so you place a light with the same level of certainty as you would a halide hi-bay fixture. So that is another key application that we're seeing for the product.

Thank you very much.

MR. FLAMM: Thank you.

Noah Horowitz.

MR. HOROWITZ: I'm Noah Horowitz with NRDC. We want to lend our support to the work by the Commission and consultants, for including the bi-level credits and the daylighting. I think those will help move these technologies along and improve their applications.

One thing I would like to point out is, as I understand this part of the code is, there have been a bunch of changes relative to the tailored method. And there was an acknowledgment that the whole building area tables have been brought up to date to the changes in technology. So we took a look, in preparing for today's standard, we took a look at the tailored method values. And I have a copy of the 1991 standards that my colleague, David Goldstein, gave me, and the values haven't been changed in over ten years.

So in light of all the changes that are being made to tailored, I'd encourage folks to update what's now Table 146-G. As you've mentioned, we've gone from T12s to T8s to Super T8s, magnetic to electronic ballasts, and so

forth.

So I guess an open ended question is, is there an intention to update that table, and if not, why?

COMMISSIONER PERNELL: What's the table, again?

MR. HOROWITZ: 146-G. Which is on page 129. These values were essentially identical to those of over ten years ago, and I can leave this with you, if you'd like.

MR. FLAMM: Mazi?

MR. SHIRAKH: That's actually the same comment that Lynn Benningfield was going to make, and it's, the way we look at it, it's still work in progress. We have updated some of the values, not all. There are differences, especially in, I don't have the old code, you do, but for illumination categories D and E and especially E and G, there should be significant differences.

But again, that's, you know, we're still working on this with HMG and PG&E.

MR. GABEL: Mazi, do you, I mean, offhand, do you know how many of those values on page 129 have changed from the 2001 standards, just as an example?

MR. SHIRAKH: I have a memory that --

MR. PENNINGTON: The changed table is right below it.

MR. GABEL: Okay. Thank you, Bill. Yeah, I don't see, my inspection, I basically don't see too many.

MR. PENNINGTON: So E went from one, from 2.3 to 1.3.

MR. HOROWITZ: E changed. That's correct.

MR. ELEY: So did D.

MR. HOROWITZ: A, B, and C are unchanged. Basically, one would think --

MR. ELEY: Right, but D and E changed.

MR. BENYA: Okay. I did the calculations. The reason why the original one changed --

MR. FLAMM: Could you identify yourself, please?

MR. BENYA: Oh, I'm sorry. Jim Benya, Benya Lighting Design, consultant to the Commission.

The reason why the smaller numbers didn't change, Noah, is because I went back and re-studied them, taking into account the fact that

as we get to the lower power densities, we can't be using T8 lamps anymore. And it's a, it's a misconception that you can use it, you know, that, the second generation T8 technology everywhere, especially in really low power densities. You have to go into compact fluorescent lamps.

So I re-calculated everything based on the most efficacious acceptable technology for the situation. In some cases, that means a 13 watt compact fluorescent lamp, which is not a very efficacious source relative to, let's say, the T8 stuff. The greatest impact was in the higher power densities, the, in other words, the letters, D, E, F, and so on, because this is where the advances can be, in fact, utilized.

So there frankly hasn't been any significant technological advance since 1991 in the low power densities, because the technologies we're using are fundamentally as efficacious as they were then. The advances will be expected in higher areas.

MR. HOROWITZ: Okay. We can talk more about that later. But even in the first few classes, the predominance was incandescent, and we've moved from incandescent from '91, so.

MR. SHIRAKH: One of the problems with the lower values is because it's only, there's only one significant digit here, when you get in such low values, you know, a tenth of a watt represents a 30 or sometimes a 50 percent change. So, you know, ideally we should have two significant digits here instead of one. It would have been easier to fine tune it. That's part of the problem with the lower values.

MR. GABEL: One question is how come -- Jim Benya, how come the, when the R star is over seven, the values actually went up to increase energy use for categories D, E, and F, and G?

MR. BENYA: Bear with me for a second, because I want to make sure I'm doing the right thing here.

MR. GABEL: Those are small, essentially small spaces. E didn't go up, E went down. E did not go up, that's true. My mistake. D went up.

MR. BENYA: D went up.

MR. GABLE: D and F, and G went up.

MR. BENYA: Particularly in that, in that it may be a difference of what value was used for the original numbers. I corrected all these to the same RCR, and just re-ran them using the

same models. We, so I can't, you know, can't absolutely tell you exactly why the numbers changed. I can tell you the modeling was very consistent.

MR. GABEL: But, you have to say, then, it's not energy neutral for those RCRs, for those categories.

MR. SHIRAKH: For the high RCR, I only see D that has gone up.

MR. GABEL: Well, D, F and G.

MR. SHIRAKH: Well, F and G are completely different.

MR. BENYA: F and G don't even exist in the prior standard, as in the way you're describing.

MR. SHIRAKH: Don't even exist. Well, I mean it's completely, it's different calculation. The old F and G were based on total distance and the task area, so it's apples and oranges. You can't look at --

MR. GABEL: Okay.

MR. BENYA: E went down in all values. D went down in all values except greater than 7.0, it went up slightly. C is, stayed the same. D stayed the same. A stayed the same.

MR. SHIRAKH: So it's only D that's going to --

MR. BENYA: And it's only that one value, so I think, Mike, we only have one value that went up, and I would say that's simply due to using a different RCR.

MR. PENNINGTON: So when you said RCR, you're trying to represent a range here.

MR. BENYA: Correct.

MR. PENNINGTON: So you picked a different value to represent that range.

MR. BENYA: Correct.

MR. PENNINGTON: That was picked up before.

MR. BENYA: And it may, I'm not even sure what it was before. I'm loading Excel now, see if I can figure out what value I did pick. I don't want to go on memory on this.

MR. FLAMM: Okay. While you're doing that, Lynn Benningfield would like to make some comments.

MS. BENNINGFIELD: Yeah, Lynn Benningfield, with Heschong Mahone Group. And we're working with PG&E and we've been working very closely with Jim and Mazi and the team, and

we'd like to thank you guys for your cooperation.

Regarding this particular table, we would like to be able to review the numbers behind the numbers, so to speak. We'd like to look at the luminaire assumptions and take a closer look at how these were determined, because we would like to make sure that the new technologies have been recognized appropriately. And since the table has changed very little, if any, and it hasn't, hasn't gone down in A, B, or C. It has gone up in this one, in this one category. And as Mike points out, when it goes up in one category you're kind of losing your energy, your energy neutrality argument, in a way. And then it gets into how you apply the particular categories to determine whether the end result is actually energy neutral.

So, and also, if this, with this particular category, with this particular table, the prior table has no descriptions, and I like the fact that there are descriptions. I think it's better for enforceability. However, if you look at the description of Category D versus the description for Category E, if I'm designing an office, let's say, I can use, where the area

category may be 1.2 for me to reference, I can now claim Category E and I can get 1.8. So I think these definitions need to be made, tightened up a bit, in terms of, particularly when you jump from Category D to E. We would prefer Category D be the default, and that Category E be the exception. And I know in the code there's a provision for E has to be two hours or more during the day.

That's kind of a small hoop to jump through, whereas meeting this definition, performance of visual tasks of high contrast and small size or low contrast and large size, that could be virtually any office, classroom, library. And so basically, you're looking at a very high LPD in those cases.

MR. FLAMM: Thank you, Lynn.

Noah.

MR. HOROWITZ: She covered the point I was --

MR. FLAMM: She covered it? Okay.

MR. PENNINGTON: Any response to that comment?

MR. BENYA: Well, that the task is required. Our modeling shows that's the power necessary to obtain it. You know, we've been very

careful in this area, and, you know, rightly so, and I think you and others have been extremely thorough in following up on this and making sure we dotted our i's and crossed our t's. And, you know, bottom line is, is that if I had a classroom in Category E, which, by the way, the IES handbook does not say that a typical classroom is Category E, it's Category D, and so therefore you wouldn't get it unless you somehow made the leap into another category.

We all realize that that type of gaming does occur from time to time, but the IES handbook's very clear about this.

MS. BENNINGFIELD: It used to be a big red flag for plan check when someone jumped from a D to an E. And I can see this definition is fuzzy enough that they might be able to get away with it more often, so I would just like to have maybe a reference to the IES handbook, and require that they meet the criteria that's in the handbook for those, in order to use the E.

MR. BENYA: That's an excellent point.

MR. FLAMM: Okay. Thank you.

Harold Jepsen.

MR. JEPSEN: Harold Jepsen, with the

Watt Stopper. And pleased to see many of the changes, at least in the control section, some of the things that have been done there, and appreciate the opportunity to work with the Commission, or at least to hear my comments.

We submitted a letter last week with six items, commenting on the draft too, and I won't address all those. Some of those just seem to be maybe some typos or a couple other things that we thought, terminology-wise, that could be clarified. But there were two items that I specifically wanted to address.

One of them had to do with multi-level astronomical time switch controls that are in Section 119, paragraph H. And that is, there's two items there. One is Number 4, where it requires a clock to have a longitude and a latitude parameter, that also a time zone parameter be included. That's an important parameter to give accurate calculation. Otherwise, you could have a potential of up to an hour's offset, based on your time. And so I think that should be included.

And the other one is to add a requirement to also include that the time switch

control the lights, automatically adjust for daylight savings. That, used for interior lighting, an hour's differentiation on your override time is usually not as big of a problem as it would be with non-automatically switching to daylight savings. And most clocks nowadays do that. There may be a few that don't. I think it might prevent a few clocks, you know, maybe sprinkler timer clocks or something like that, that are being used for outdoor lighting control, and ask that that be included.

The other area is in Section 131, it specifically has to do with the relationship between Part A of Section 131 and also Part D, shut-off controls. And I think that since the code back in the early '90s that first brought to California shut-off controls, that there has been some confusion as to how area controls interact with override controls. And we submitted early on two measures that tried to address and clean up some of the ambiguity of this area. And that is that sometimes overrides are allowed, or at least there's an impression that overrides can be installed in buildings that would override multiple spaces, multiple offices, which actually,

you know, in a way I think the code is supposed to be interpreted, and as the compliance manual shows, that every individual space is area controlled, so it should be override to shut off system.

And actually, what we're seeing in common practice out there is that a single override will be used out in a hallway or a common area that will allow lighting in multiple rooms or multiple offices be turned on at the same time when, in fact, that person may only be using one single room. And I think some clarity can be added. We've provided some suggested language for that inside our letter, as they were included in the measures that we submitted earlier.

And so those are my two main comments.

MR. FLAMM: Thank you. They're good points.

Okay. Lynn, you have something additional to say about the tailored method.

MS. BENNINGFIELD: I do. Lynn Benningfield, Heschong Mahone Group.

Can I talk about the new prescriptive method first? Our goal in watching this whole process is to, you know, recognize new advances in

technology, but also to retain or improve enforceability of the code, because energy savings aren't realized unless the code is enforced. And I think everyone would admit that tailored is a very complicated way to improve compliance with code, but I also agree that it's a necessary way, it's necessary to provide it, because we need to provide flexibility of the code, also.

But the very, the new method that's the prescriptive specific common lighting systems method, I would argue that it's probably not any simpler, and add a whole 'nother layer. It's not any simpler than a whole building method, because in practical application I have to make sure my building category is right, then I have to make sure my luminaire is right, I have to make sure my ballast efficiency is right. I have to do my spacing right and prove that to the building official, as well. So that, to me, that doesn't take any less time or provide any more simplicity over just listing the number of luminaires and listing the wattage per and dividing by the square foot of the building.

And also, it does add to the perception that now there is five methods for lighting

compliance, when -- and I understand the reason behind, or do see, and I just don't think that it is a practical alternative at this time.

And I have a question about that one table, 146A, in particular, on page 116. The third row down, it says, discusses four foot surface metal fluorescent fixtures would have to be no less than eight foot on center. Is that measured from the exterior wall to eight feet? Would that be the first measure, or would it just have to be on center from then on?

MR. BENYA: Jim Benya responding. I'll respond to that one first, Lynn.

In the footnote at the bottom of the page 101, luminaires shall be mounted at least one-third of the specified mounting distance away from any ceiling high partition.

MS. BENNINGFIELD: Okay.

MR. BENYA: These layouts, these patterns, were determined to achieve consistently less than one watt a square foot, at most one watt a square foot, whole buildings at one, less than one watt a square foot. And it was designed to allow that really quick layout of very commonly occurring luminaires, because it's been made, it

appears to be complicated by having ten different sets or types of luminaires, it was meant to accommodate a variety of conditions. We frankly expect significant use of this, because people can lay out two by four trappers on eight foot centers, like they do today, and as long as it meets minimum guidelines, no one has to do recalculations and all the inspector's got to do is look at it in the field.

I believe that inspectors will become very familiar with the complying luminaires quickly, because they're everyday luminaires that are used in an everyday manner. And they will learn, in the field, very quickly check to see if they're eight feet on center, is, by the way, indicated in here from the centerline of the luminaire. And I think they will find it easy to apply. You aren't allowed to use, for example, track lighting, which has always been a thorn in our side. You won't be able to use things that are typically gamed, but I think this is relatively, I've tested this one pretty thoroughly, this is pretty game proof. So I think it will be very useful.

MS. BENNINGFIELD: I mean, I agree that

it's useful. I know it's used in Washington, correct. But are we guaranteed that it's under one watt per square foot, even with all these exceptions added, like five percent of the total luminaires of the project by count may be hard wired of any type rated not more than 150 watts? If you add those in, and then you also add in these under cabinet luminaires, which are also exempt.

I, I think when an inspector gets into the field and he sees some of these 150 watt lights, then there's going to be an argument with the applicant over well, that meets my exception criteria, because I have less than five percent. And then you'd have to go through the effort of proving that, and then you'd also have to prove these other exceptions, as well. So, you know, on the surface it does seem better, but I think from a practical application standpoint it might not.

And also, these luminaires that you're saying will become commonly understood, are these the default luminaires that are going to be in the new ACM? Like, for example, there's, going back to this recessed two lamps, 64 rated watts or less, maximum 60 watts input to luminaire, is that

a default lamp luminaire combination?

MR. BENYA: Well, the luminaires aren't listed, are they? I mean --

MS. BENNINGFIELD: I think we saw them in --

MR. ELEY: We listed --

MR. BENYA: You may have ballast combinations, yes.

MR. ELEY: -- the ACM only has lamps, luminaires. But if you have, I believe the numbers for T8s with magnetic ballast are consistent with what's in the --

MS. BENNINGFIELD: Okay. I guess my question is if I just --

MR. ELEY: -- proposed Table B11.

MS. BENNINGFIELD: -- if I just buy a standard two by four without regard to anything in particular, and install it on a site, is that, does that meet this criteria?

MR. ELEY: No.

MS. BENNINGFIELD: Okay. So --

MR. BENYA: Lynn, let me answer that. If you buy a standard two by four electronically ballasted two-lamp -- there is a huge likelihood that it will comply. That doesn't guarantee it,

but almost all ballasts that are made and all ballast lamp combinations that are used in those luminaires comply. I very carefully picked these numbers, these luminaires, these spacings, and these values, to correspond with everyday off the shelf commonly used equipment that we see you can buy this luminaire at Home Depot.

MS. BENNINGFIELD: Okay.

MR. BENYA: Type of thing.

MS. BENNINGFIELD: I guess, you know, without belaboring the point, I would still argue that it's not, doesn't save any time, at least as far as I can tell, versus the paths we already have. And so I don't think we'd advocate adding it just, just for that sake, for its own sake. I don't know how Tom feels about it.

MR. SHIRAKH: Tom, what do you think?

MR. TRIMBERGER: Tom Trimberger, representing California Building Officials.

I'm not sure. I think there are certainly places for it. I had a question about this, you know, its usability and where it can be used, you know. Looking at the nominal four foot recessed or surface mounted fluorescents, those are used all the time, and it's good to have a

handy rule of thumb to use that. When we complicate it a little further, it makes it a little more difficult. I kind of have two questions on this, though.

As far as before permits are issued, we look for compliance, and that's more complicated, and it requires one to multiply and divide, where this one doesn't. But when we get paperwork that shows these, that we've got this many lights in this much area, and we say okay, that complies, you can build it, this, to me, looks like something that an inspector can try to walk through and do. Are we going to get some lighting form that says that we use the common lighting systems method, and is it going to tell us the types of luminaires, or is it just field verified, per these rules? I'm not sure how this is going to be documented. That's kind of my first question. Has that been looked at yet?

MR. ELEY: We haven't worked all of that out. I anticipate that there will be a check box on the form, or something, where it says complying by common lighting systems, or something of that nature.

MR. TRIMBERGER: Secondly, it refers to

the whole building table. So is this meant to be per building, or is it something that I can say, you know, one tenant space can use this?

MR. ELEY: Any permit application, I guess. So if the permit application is for the whole building, or just a tenant improvement. But, but it can only be used for spaces that require less than a watt a square foot, so that limits its application, too.

MR. TRIMBERGER: Okay, yeah.

MR. ELEY: If the space is in table --

MR. TRIMBERGER: It says in the building, and then in the next paragraph it says building or project. So if they're just remodeling, you know, one clerical area in a large office space, that just goes to the one area, then.

MR. ELEY: And, yeah, if that space allowed no more than a watt a square foot, you could use this method.

MR. SHIRAKH: It's actually kind of similar to the tenant improvements language that Gary Farber and I tried to work at, and made a lot of clarification. I think in the manual we can use some of the same rules that would apply to

this method.

MR. GABEL: Yeah. I think, Charles, perhaps you're misspeaking. What you meant is if the allowed wattage is one watt or higher, you can use this as --

MR. ELEY: One watt or higher.

MR. PENNINGTON: So related to Tom's question, my understanding of this is that you couldn't just do a space, and, you know, you're permitting a whole building and you want to use this approach for one space. My understanding is this proposal, you would do the same approach throughout the project. Is that, is that right, Jim?

MR. SHIRAKH: I don't know why I think --

MR. TRIMBERGER: No, that, that wasn't really my question. I didn't think that they would be doing a remodel and do a tailored here, and an area category here, and then here do a comp. But, no, I was looking at you're remodeling, you know, part of a space where it says in the building, or building a project. So I, and it was referring to the table for the whole building method. So I just wanted to clarify

whether it could be used for an area that's less than a whole building.

MR. ELEY: As long as it requires the watt or more with --

MR. GABEL: This strikes me, this is really not a compliance method. This is a way of demonstrating installed lighting power density.

MR. ELEY: You could look at it that way.

MR. GABEL: Well, it is a, conceptually a lighting method, it establishes a lighting allotment, how much you're allowed to put in the building. And then you have to show you put in no more than that. This is really saying, this is a way of demonstrating that you installed lighting inside of it. So I think the manual or the standard should be clear that this is really a way of demonstrating installed lighting LPD, not allowed. That's --

MR. FLAMM: If I can remind everybody to please identify yourself for our reporter and for those on the Webcast. Thank you.

MR. GABEL: I'm sorry. This is Mike Gabel.

MR. FLAMM: Thank you.

Gary Farber.

MR. FARBER: I wanted to ask a question about Table 146A for this common lighting method. Spacing, is that in both directions?

MR. BENYA: Center to center. Centerline, crosshairs. To centerline crosshairs, both directions.

MR. FARBER: Okay. So it's in both directions. Okay. I think that should be made clear it's in both directions. So that, that means, for example, the four foot fixture eight foot on center, they could be end to end, a continuous row of --

MR. BENYA: There's a specific line item for continuous row fixtures. They are separate and individual fixtures in continuous rows. There are separate numbers or values for the two. There are many conditions, and I want to allude back to a comment that I could've made a lot earlier, it would've helped a little discussion. One of the major trends in the industry to improve lighting quality is to go to indirect lighting or lighting systems that have an indirect component. We see a significant number of office buildings, for example, and schools and other properties, going

to indirect lighting because it does improve lighting comfort and quality. Systems are very efficient.

And the, one of the line items here anticipates that by permitting indirect lighting systems, and, by the way, it doesn't, it allows either T8 or T5 technology in those cases. There are many situations where T5 is might be the superior technology. Neither one is ruled in or out, although you're going to have to use one or the other effectively.

MR. FLAMM: Gary Farber.

MR. FARBER: Okay. I'd like to make a few comments regarding the tailored standards, and first I'd like to thank staff and the consultants for working with CABEC and others. Many of our concerns have been addressed, and we appreciate that.

One thing regarding definitions that I would like to see considered is not using the term "retail". I think it's, it's, the term "retail" tends to stand for a building type which typically or often is occupied by many types of occupancies that are not, in fact, merchandise sales. And the standards use the term "retail" to denote

merchandise sales, but, in fact, in common practice, the term "retail", when it's referred to as a building, retail building, often will have spaces that are not merchandise sales. It will have real estate offices, other types of offices, packaging and shipping stores, and the like.

And so to make the standards more clear, I would like to, rather than use the term "retail" and define it as merchandise sales, simply use the term "merchandise sales" and, and just be more clear about it.

And for whole buildings, I think we need to have a different defined term, which is a shopping center building, or something similar to that, where the lighting requirement would, for spaces that are not leased, would be probably the same or similar to what office lighting requirements are now. They, because sometimes a developer will complete a shell even if the, and complete the lighting, even if the space isn't leased, and they don't know who the tenant's going to be. They don't know if it's going to be merchandise, you know, merchandise sales, you know, or if it's going to be a real estate office, or whatever.

And we see projects where they say it's a retail building, give us retail lighting. And they put it in retail lighting, and then say well, it might be retail, but in fact, it may not. And the reality is if you put in office level lighting and a retail customer comes in, they're going to want to add track lighting anyway. That's the reality. So by having a lower threshold when it's not leased, it gives them that extra cushion so that they actually may be able to legally add some lighting, which you probably want to do. So I'd like to see some consideration for that.

Another issue, on Table 146C on page 124, it's actually on 125, but it's Table 146C, the complete building method. We, CABEC was concerned about the use of having a complete building category for retail and wholesale, because the proportion of actual sales area to storage and other types of uses vary significantly. And I thought we had come to an agreement that, that the merchandise area had to be at least 70 percent, but I see in the draft it says 30 percent.

MR. SHIRAKH: It's an error. We'll correct it.

MR. FARBER: Okay. So it is meant to be 70 percent. Okay.

MR. SHIRAKH: Yes.

MR. FARBER: Okay. It's a big difference.

MR. SHIRAKH: I'm dyslexic.

(Laughter.)

MR. FARBER: Last, the last thing I wanted to say about tailored lighting, and this, this would apply to several types of occupancies, but the main concerns with what's currently called retail, merchandise sales, and the current standards will give you a extra allowance under the tailored method for display lighting if the plans show displays. Floor displays, wall displays, that kind of thing. And I recognize why the proposed standards are moving away from that, because building plans often simply show display areas so that they can get the lighting, and display areas tend to change over time. And the current standards don't work that well in that regard, because people will just game it to put in what they need to maximize the allowed lighting.

That's recognized. However, the proposed requirement will simply give you an

allowance for general display lighting simply by having directional lighting. That is the only requirement, as I understand it, that would give you that extra credit. And our concern is that by adding the general lighting allowance with the general display lighting allowance, one can come in and use all inefficient directional lighting as general lighting, even if they have absolutely no display at all.

And CABEC has in the past suggested consideration that if someone was going to take this credit for the display lighting, that they at least make the general lighting efficient, that it has to have a certain efficacy, and people involved in this discussion weren't happy with that. We then suggested that perhaps 50 percent of the general lighting be high efficacy. We wanted to at least somehow break the notion that you can add up all of the general watts and all the general display watts together, and just simply use it for inefficient lighting. And we're afraid that it's going to be even easier under the proposed standard than it is under the existing.

And I should point out if we're going to make a comparison of the existing to the proposed

standards, under the existing, if you have no displays you get no display lighting, and under the proposed, if you have no displays, you get display lighting. So from that standpoint, it is not exactly equivalent. Although I understand that that doesn't account for the fact that people will show displays, even if there aren't displays.

Anyway, I'd just like to, you know, I think this issue still needs to be addressed, and I'm wondering if there, you know, perhaps another way to address it, if there isn't support for at least requiring some component of the general lighting to be efficient, and I still think that that is worth pursuing, but perhaps the display lighting could be required to be a narrow beam, or something to, so that, I don't know, Jim Benya could probably address this further, if there's some technical requirement so that the display lighting would be unlikely to be used as general lighting, as well. So I'd just like to throw that out.

MR. FLAMM: Jim, do you want to comment on that?

MR. BENYA: Yeah. The, and Gary and I have spent a lot of time, and I really want to

thank him for all his contributions, and he's, again, served a very important role in this process by bringing things to our attention and challenging us to do a better job.

It's getting to be increasingly difficult to separate display lighting from non-display lighting. And the point that Gary's trying to make, and there's a certain amount of wonderful truth in it, is that there are a number of retailers, and from my experience a very common retail design, you see utilize track lighting almost exclusively in the store with nothing else, and to put up all track heads and to create a highly dramatic store, with great extremes of light and dark. I think a really good example, for example, would be Crate and Barrel, is a company that does this almost exclusively. And what he's suggesting is certainly they, I think, epitomize that approach. On the other hand, their store designs, to the best of my knowledge, comply with the standard as it is, and would comply with the standard that we've developed.

We have tested the tailored method for retail very, very significantly, and without getting into specific designs, we've proven, I

think, that it does reduce the allowed lighting power significantly, relative to the current standard. It puts a constraint on it, it puts a lid on it that didn't exist before. It typically, in design after design, it comes in anywhere from a few percent to 10 to 20 percent lower than the current standard. We feel that that is a significant improvement. It takes us where we need to go.

Gary's point is one that I don't feel we should be doing right now. I think it does begin to impose specific design upon people, and as long as they comply with the standard, you know, do we start setting, you know, do we start making value judgments. Well, you could do better, is the, is the net comment you come up with. And I think if we said that to people building buildings in California, everybody would hear that in some way, shape, or form.

So I think I'm opposed to that much of a quality issue being part of the standard at this time. We've done what we set out to do in this draft, and I think that it would be, this is not going in a good direction. And again, we've had this discussion. I think we remain opposed on it

and, but I appreciate it coming up because it does speak to an issue that, you know, could be dealt with if we wanted to make that quality judgment.

MR. FLAMM: Thank you, Jim.

Gary, do you want to answer?

MR. FARBER: I, just a quick response. And that is that no one is required to use the tailored method, and to get extra credits for display lighting they could use other methods. And we're simply saying if, if you want to take this extra credit to get extra watts for display lighting, why not at least impose some efficiency for the standard lighting. So, you know, you see arguments both ways, but we think it's something worth considering. Thanks.

MR. FLAMM: Thank you. Lynn, I don't think you finished before, did you?

MS. BENNINGFIELD: Oh, no. I, I'd like to make a comment about Gary's point, and just to kind of reiterate in a different way, this whole tailored lighting thing is kind of like the tax code, and you have to be on the alert for these unintended consequences, one of which is this. Making it simpler by not requiring the plans to show display areas basically allows them to take

the credit for the display lighting as long as they have the fixtures to show it.

So to simplify it, it basically loosened it, in one regard. And that's what you're trying to put a cap on; correct?

MR. FARBER: Yes.

MS. BENNINGFIELD: Okay. So I just wanted to illustrate that point another way that, and in one way, PG&E agrees that the tailored lighting does have new caps that it didn't have before. However, our concern again is with this middle ground. We have occupancies other than retail, other than high end retail, that may end up having higher densities when they use this tailored lighting method.

For one example, I mean, if we turn to the Table 146E, and this is the table that shows where you can use, which occupancies you can use this tailored method B on, and which ones you can use A on, and in some cases you can use one or the other. But for my example, let's say the dining. In dining occupancies you can use, the allowed tailored method is Method B. And the starting point in LPD for Method B, according to the draft code, is 1.2, 1.4, or 1.6 watts per square foot,

depending on the room configuration and the room cavity ratio. But under, you know, 1.1 is the area category number for dining. So you get a higher starting point with the tailored, then you also get to add seven watts per lineal foot for a display, wall display power, and you get general display power of a half a watt per square foot, and you get to use ornamental lighting up to .7 watts a square foot. So you can see how this can build upon itself, and in certain cases it's going to serve to have occupancies other than these high end retail use more power. And a lot of these occupancies, like classrooms and so on, well, let's see. Grocery stores -- restaurants is a, these are peak, peaking times in a lot of cases, and they will contribute to air conditioning load, as well. So I guess, you know, keep one kind of off the wall sort of solution to this whole problem, because tailored lighting was designed for high end retail, and the area category method does allow, by the existing code, a provision for, if you look at Table 146D now, which is on page 125. There are provisions for occupancies to use chandeliers and other additional lighting power allowances, and the code also allows for any

occupancy with this, using this area category method, to apply the tailored method to ten percent of the floor area.

So I guess our kind of radical suggestion might be let's limit extremely which occupancies can use tailored method A or B, and then perhaps look to this area category method exception, where ten percent of the floor area can be modeled as tailored, to provide extra illumination in those occupancies where they need it. For example, in a dining for accent lighting, or in a grocery store for display lighting, or even in a classroom or a civic facility for display lighting. If we have these other credits available under area category, it kind of simplifies things, pushes more occupancies towards that method, rather than the full-blown tailored. And it may end up saving energy statewide in the long run, if we push towards that direction.

MR. BENYA: Can I respond? Jim Benya.

Our response is yeah, it's a very radical, Lynn. It's a significant change from the current standard. We believe that to the best of our ability, this revised tailored method is neutral, or maybe is a tightening, and in some

cases an important clarification, and reduction in gaming potential for the tailored method. The reason why we came up with A and B methods, because the A and B methods currently exist, they just aren't called A and B. The way the rules are structured, there's building types that can use the tailored method in all of its glory, and there are building types that can't. Well, that's kind of A and B. It's where the logic led us to the A and B selections, because we already do it.

Gaming occurs primarily in retail, and to a lesser extent it occurs in other building types, particularly when you get into hospitality is another prime area for gaming. We've had a minimum amount of gaming in certain other building types. However, first and foremost, maintaining the A method, which is purely the use of the IES and the illuminates categories, and the Table 146G, I think is the profound difference in what makes the standard superior to IES 90.1 and other standards. Because under extreme circumstances, where extremely high lighting levels, for example, are needed, Title 24 accommodates them in a manner superior to any other code. And this is what makes it the best code, in my opinion, for

lighting that we have.

To take away that capability would be a serious error, in my opinion. So a significant number of building types, virtually all of those that utilize the A method, in my opinion, would be damaged from the current capabilities and the quality of the code if we did that.

The B types are the types that I believe are most often gamed. And what I've tried to do in developing this philosophy is to say let's limit the choices, let's limit the amount of power, and therefore limit the amount of gaming. And I believe that by setting watts per lineal foot of perimeter and other things that we've done, we've actually really constrained the amount of game playing that can occur, compared to the current standard. We've eliminated, virtually eliminated the ability. This public area display, for example, the way it is currently written, that was a huge opportunity to add wattage to the, to the project.

So we think we've made some serious improvements in gaming reduction, some serious improvements in maintaining the heart and soul of the standard, without losing its flexibility in

very important areas. And I believe your proposal to change that would take away the heart and soul of what makes the tailored method such an excellent standard.

MS. BENNINGFIELD: Well, I'm not advocating to eliminate the tailored method. I'm advocating to maybe limit its use in occupancies where it may not be always appropriate.

And in response to the gaming, I, I do believe you have curtailed it in some ways, and in some ways the way you've curtailed it is by allowing it. And so it may end up, you know, hurting us statewide in the long run. I, I just think that this tailored method is just perfect for high end retail, not so perfect for anything other than high end retail, and it needs to be looked at so that the energy savings can be maintained.

MR. BENYA: In rebuttal, we did have a workshop on this. We were all in attendance at it, and we had testimony from two practicing lighting designers who basically suggested that every project, particularly retail, is so gamed that this would be a real significant improvement in reducing gaming.

MS. BENNINGFIELD: For retail.

MR. BENYA: As far as other project types are concerned, I'm not sure what you're talking about, because most building types can't use the B method. Most building types have to use the A method, most of the common building types, schools and health facilities and other things. So we've tried to constrain the B method to only those project types where public area displays, which are presently permitted by the standard, would typically be used, and we've tried to get out arms around that.

So I, I really do think a lot, there's a lot of hidden thinking about gaming. Also keep in mind that as a lighting designer, I have been working with Title 24 for some 20-some odd years, and I've seen its evolution. I've participated in it, I've gamed it, I've done, you know, everything. So I'm coming from the standpoint of someone who kind of knows what the system is and how it's used myself, and I believe this does really constrain the options that -- reasonably, without unreasonably constraining the options.

MS. BENNINGFIELD: Okay. For the record, classrooms can use A or B, so there are

quite a few occupancies that can't use A. But I, I think we can agree to disagree here, but I think PG&E's position is going to be that we would like to see more work done towards, number one, documenting these models in these models, and have a separate review procedure, like Mike was suggesting earlier on, to justify that if lots of different occupancies, and the nine that we have is fine. We just need to look at the nine that we started, and make sure that we're doing apples and apples comparison, and then circulate it widely and make sure that CABEC does have time to comment on it. And that's to ensure that we're not, that we've got some energy neutrality in the tailored method.

And then I also think the best thing to do would be to look at these other occupancies, and look at the base LPD as 1.2, 1.4, 1.6, as well as the Table 146G data, and look at the scientific basis for that. And make sure that the, the technology, the advances in technology have been credited there. And also to look at the baselines in method B, one-two, one-four, and one-six, and make sure that they represent the ambient condition, the general lighting only, not general

lighting plus some level of display. So we need to look at what would the base be without any display, and build upon that in the tailored method.

So this data that's base, that the numbers of 146G represents, could we review that, you know, in the next few weeks? Take a look at the assumptions behind 146G?

MR. BENYA: Directly, you may. It's actually sitting right here in my screen, if you'd like to see it.

MS. BENNINGFIELD: Oh, great.

MR. BENYA: I was able to find it. And there's just one point that I'd like to make. Actually, that value for D, 1.7 under RCR of 7, which is the only one that increased, the 1.49 to 1.7, actually we might be able to, I think we should drop that to 1.5. And I don't know how it got to be 1.7, because right here in my table I think it ought to be 1.5, but then I put 1.7.

MS. BENNINGFIELD: Okay.

MR. BENYA: So 1.5 would be, you know, an appropriate number for that.

By the way, just for your information, that calculation is based on an 80 mean lumen per

watt light source. It is based on using indirect lighting with a high reflectivity ceiling. The coefficient of utilization in RCR8, which is what I used, is 31 percent. To achieve that, that particular model. The product that was used is fine light series one.

MR. FLAMM: Okay. I'd like to have Mazi, and I know Noah's been waiting. So Mazi, Noah, have you done? Okay. Mazi.

MR. SHIRAKH: Just very quickly. The Excel spreadsheets, the nine different function areas, some of which could use both A and B, and I ran them both, but it's, it showed that the proposed method is significantly less than either A or B. Again, I'll be happy to e-mail this.

MS. BENNINGFIELD: Yeah. As you know, the devil's only an assumption, so, and so I would like to look at it.

MR. GABEL: Just a brief comment. Mike Gabel, a brief comment. In the glossary, or the definitions of the standards, we still define display lighting the same as we always have. And I'm wondering, in light of the new methods, whether that has any meaning anymore, because if you put in tracks that are evenly spaced in a

whole store and make it comply, it really, the display, there is no display that provides a higher illumination than the areas surrounding in luminance. So I'm wondering whether that terminology is any longer relevant in the standard.

MR. BENYA: I'd like to call your attention to page, let's see, 119, and especially page 120. On page 120, B, display lighting method, method B, we have introduced in the requirements under sub Roman numeral lower case 3 and roman numeral lower case 4, what types of lighting can be used to receive this allowance, what luminaire types and where they must be located. And we kind of came to the conclusion, though, as Mike, is that there's a perimeter around the room where we try and do primarily wall illumination, and then there's the center of the room, and where we don't. And so the types of luminaires, where they're mounted, that can be permitted to use in this category, are those only. It's a use or lose it allowance, to boot.

So again, we took into account the concerns that the inspecting authority might have. How do I know that this luminaire is being used to

do this. Well, it's got to be mounted within that area, and it's got to be a luminaire of a suitable type. So the previous definition, you're right, we may have overlooked deleting it. But we put a lot of effort into trying to make this absolutely crystal clear what does count and what doesn't.

MS. SHAPIRO: So you would say we maybe need to change, on page 24, the display lighting definition, to make it fit more with the meaning in page 120?

MR. BENYA: We might even be able to delete it, since it's, we've gone to quite a bit of trouble to narrow it down significantly further.

MR. FLAMM: John.

MR. McHUGH: John McHugh, HMG. I guess a couple of questions. One, well, not a question, really, it's more a statement. We have been asking for the basis of 146G, I think, over the last month or so, and we'd really like to receive it, and like to distribute it to all the interested parties.

Jim, you mentioned that A, mean lumens per watt, is being for the calculation of area category D. But it's my understanding that for

the basis of the standards for the actual area category method, we're looking at something like 88 lumens per watt, based on a second generation lamp and ballast. Why are we using this lesser efficacy lamp and ballast system for indirect lighting?

MR. BENYA: Jim Benya. The answer is because I wanted to make sure that we had the ability to use the T5 high output system, which is slightly lower in efficacy, compensates by efficiency. I didn't want to preclude the capability of doing that, and so the luminaires that we used for modeling used T5 HL. You get similar results with T8 second generation, so, but I, I didn't want to constrain that.

The other thing, of course, is that, you know, I didn't really want to get into being too tight on this. You know, we could go to 90 mean lumens per watt, but that sort of narrows down the number of light sources. And sometimes you need the T5 high output when the ceiling is less than about ten foot six. It's just, in indirect lighting system, it is, it works better. Allows the wire spacing of rows.

MR. FLAMM: Okay. Anymore comments on

the residential standards?

(Replies in unison, no, not on res.)

MR. FLAMM: I just woke everybody up.

On the nonresidential standards, Tom Tolen -- I got the right name, last name this time, Tom.

MR. TOLEN: Thank you, Gary. Tom Tolen, with TMT Associates.

I'd just like to preface my remarks by saying that no one is paying me to be here. I'm not, I'm not going to argue one side or the other. I'm here as an interested party, as a lighting designer with 18 years experience. And I would really like to commend the work that these guys have done in improving the tailored method significantly.

I've heard the comments on both sides, I've offered my own. I've been to workshops on it now. I think the consultants have answered the concerns that have been expressed by PG&E's consultant here. I'd really like to see us move on from that. I think what we have now proposed is a vast improvement over what's been there in the past, and I can speak not only as a lighting consultant but as someone who teaches classes on

Title 24, and who is familiar with the issues that come up when people ask questions.

As a designer, I can say that this offers us a lot more flexibility for creating higher quality designs, in addition to saving energy. So I hoped that someone would come up, other than me, and state this, but somebody had to say it. So, thanks.

MR. FLAMM: Thank you, Tom.

Okay. Well, at this time we're -- Mazi.

MR. SHIRAKH: I just had a question for Tom Trimberger, this time.

What's your opinion of the new tailored method? Do you think it's simpler, is it going to help you with compliance?

MR. TRIMBERGER: I, I really don't have an opinion at this time. I haven't looked at it, and I'm not, haven't been involved in it, and haven't studied it.

MR. FLAMM: Okay. Then let's dismiss for lunch. We'll be back at 1:30 to start up with the outdoor lighting. I ask everybody that wants to make comments on the outdoor lighting to please fill out one of the speaker cards and let me know what it is you'd like to speak about. And anybody

that stays in this room, remember that the Webcast is still going to be live all day, so guard your conversations if you stay here.

(Thereupon, the lunch break was taken.)

AFTERNOON SESSION

MR. FLAMM: Good afternoon.

MS. SHAPIRO: Good afternoon. Will you all please come to order. Like that.

MR. FLAMM: Okay. This afternoon we're going to start with addressing the outdoor lighting segment. And before we start, I'm going to have, turn the microphone over to Commissioner Rosenfeld.

COMMISSIONER ROSENFELD: My opening remarks, besides welcome, are that we, the Commission is aware that there has been some concern expressed about our legal authority to regulate outdoor lighting, which is a new event in California, in particular, the signs that go on buildings. The Commission's legal counsel has looked at this issue carefully, and has concluded that we do, indeed, have that authority.

So I want to make the point that this meeting this afternoon is to discuss the technical issues, are we doing the right thing, are we doing the wrong thing, but not to debate the legal issues. My skills, at least, for sure, are not in the legal area, so I'll try to stay away from the technical part, but I don't, I don't have

anything, I don't want to entertain legal discussions.

And thank you. Ready to go ahead.

MR. FLAMM: Okay, thank you.

Next, Jim Benya, are you ready to make your presentation?

MR. BENYA: I am ready.

Good afternoon. My name is Jim Benya, with Benya Lighting Design, consultant to the Commission, and representing an outdoor lighting team that has worked to prepare the document before us.

Next slide, please.

The team, I'd like to take a moment to recognize Charles Eley, and Larry Ayers, from Eley Associates, our fearless leaders in many ways, and people who hold us all together and keep us going in the right direction. Myself, Nancy Clanton from Clanton and Associates of Boulder, Colorado. Lisa Heschong, the Heschong Mahone Group, here in Sacramento. And with really significant and deeply appreciated participation from Mazi, Gary, and Bill, from the California Energy Commission.

Slide, please.

There's some related changes to the

standards that have occurred due to the addition of outdoor lighting. One of the first things we had to do is in Article 1 of the standards, was to address these and add them to the scope. When we moved into exterior lighting, we became immediately aware that this also brings into the standard unconditioned buildings. And so there have been additions throughout the documents, mostly in the areas where unconditioned buildings are most affected, the standard is an unconditioned building. In addition, we added the scope, added to the power density calculations much the same as conditioned buildings are.

We then added definitions that are needed for outdoor lighting. I'm going to hit upon a couple of key definitions as I go through my discussion, so you can see what I mean. And then, finally, it adds and, and gives a common definition of high efficacy lighting which is used throughout the standard.

Next slide, please.

The, one of the most significant things that comes to mind as we started working on this was the vast differences in lighting requirements and lighting needs between natural portions of the

state and rural portions of the state, versus the cities. And fortunately, as we reported to you in the previous workshops, both IESNA and the CIE offer us a structure of lighting zones which have been identified now in the standard, and the standard has, indeed, added Section 114, which provides administration for these lighting, these lighting zones.

MR. ELEY: It's 133 now.

MR. BENYA: Is it 133? Okay. It's population density based, so that the determination of the lighting zones, to a certain extent, the two default zones for the state are lighting zone 2 and lighting zone 3, and they are population density based. And then there are rules which permit the local authorities to adjust the numbers up, or the zone assignments up or down.

Slide, please.

The zone 1, Lighting Zone 1, state and national parks, nature preserves, wildlife preserves, et cetera, is relatively straightforward. The zone 2 is rural areas defined in the 2000 census. Zone 3 is in urban areas defined in the 2000 census, and zone 4 is an

intensive lighting area identified and approved by a local jurisdiction. So this, to a certain extent, does leave the administration and some choices up to the local authority.

Local jurisdiction can move a 2, zone 2, down to a 1, or up to a 3, it can move a zone 3 down to a 2 or up to a 4. The whole idea is to give the local officials and the local municipalities some way to manage their environment to meet the specific needs of the community.

Slide, please.

However, the biggest thing that has happened, those are all administrative, relatively speaking, to the next things I'm going to go into. In section 133 we have added prescriptive requirements for exterior lighting. We had quite a debate about what section number it belonged in, but because it's not intended to be included in the calculations for the entire building, obviously sites vary from buildings, large buildings with no sites to small buildings with huge sites, there's no way to correlate interior area, or even building use or type with the size of the site. So it's been separated in section

133, principally for that reason. It establishes power density values for exterior lighting. And we'll go into some of the specifics in a second, what those include.

Some of those allowances, which are general outdoor lighting allowances, can be traded off. In other words, you get so much for parking lots and so much for the general site, and you can trade one against the other within certain rules we'll show you in a second. However, there are -- oh, and in addition, there are use it or lose it allowances. For example, a building facade, you're provided a certain amount of power to light the building facade. If you don't light the building facade, you don't get the power.

It also requires that an area be illuminated to get the allowance. One of the things we were concerned about is if I were to, let's say, have parking lots associated with a high school, and one of the parking lots was illuminated and one wasn't, would I get the power density from both parking lots to use only in one, and the answer is no. It also includes signs, which we expect to be a rather interesting discussion today.

All of our work was based on the IESNA handbook, ninth edition, plus IES principal recommended practices 3399 and RP-2-01, which we took quite a bit of, we spent quite a bit of time trying to assess some of the differences between the IESNA's recommendations, and we, frankly, ended up taking the most liberal with respect to providing the most power so as not to try and fight some of those differences.

Slide, please.

One of the key things is the concept of illuminated area. Here you see two areas in gray, with a light fixture in the middle. The first part of the definition is light fixtures in the middle of an area. The second thing is that the size of that area square is three mounting heights by three mounting heights. The idea behind this was that -- do I have this right, or did I do this too fast? Anyway, yeah. The idea behind this is that the, this is the way you determine whether or not an area is illuminated. And it's, so if, if the fixture isn't close enough to the area and can't illuminate it, it's pretty logical --

MR. ELEY: Jim, there is an error on this graph, though. It should 6H, right?

MR. BENYA: 6H, yes. It's 3H from the centerline over, so there is an error in this graph. It is 6H, not 3H for the overall size of the square. It's 3H from the center of the square to the side.

Slide, please.

This is going to be hard to read, but it's pretty important stuff, so let me tell you what it says here, and I'm going to actually step up to the -- well, I guess I can't do that. I'll stay here, but I'll try and read it.

MR. ELEY: This is also in section 133A, I believe. On page --

MR. SHIRAKH: It's on page 81.

MR. ELEY: -- 81.

MR. BENYA: Thank you. During the workshop, we had presented some values to you that were developed by the team. Between now and then, I have reviewed all of these values. I have done some additional models and calculations to confirm or deny models prepared by other team members, and then I've added some additional information so that we can translate these into conventional terms. Those of you familiar with the IESNA standards will recognize that there is

conventional terminology that the industry tends to use, and then there is the terminology that the IES is currently using. Some of the models were expressed in the latter, and I've translated them into the former.

Let me begin by showing you in parking lots in hardscape areas. The first proposed value is .04 watts per square foot for those areas in lighting zone 1. That translates into classical terms 0.5 foot candles of average illumination, with acceptable uniformity. Previously, our reports have shown that in different terminology, and I felt it would be very helpful to people if I put it in classical or conventional terminology. A .06 foot candles, which permits .06 watts per square foot, which permits one foot candle average for lighting zone 2; .08, which permits 1.5, and .15 which permits 3 foot candles in zones 2, 3 and 4, respectively. These are very, very consistent with what I consider to be standard practice today.

And the other thing I want to stress is these values, which were originally calculated in this particular instance by Clanton and Associates, I redid my own models just to confirm,

and in my opinion these numbers are, if anything, a little bit on the generous side. You should be able to, with high performance equipment, get significantly higher light levels, perhaps as much as 50 percent or more higher, if you used high performance lighting gear. This can be achieved with, in my opinion, common everyday lighting gear.

The next line is building grounds and linear feet. This is a change from what we've shown you before. Previously, we proposed that the amount of lighting being allowed for building grounds would be based on square footage of walkway, but one of the problems is, is that it began to get, for example, if you had two parallel walkways that shared just a small divider, according to that formula you'd get a lot more power than was intended by the standard. So what I've done is correct this for building grounds, that you are allowed a long walkway up to, or a driveway, or something else, in other words, along a single or multiple paths of paving or a drive or walk area, up to, I believe it's 60 feet wide, you're permitted this much per lineal foot along the centerline of that path.

This turned out to be a much better way to accommodate the way drives and walkways and bikeways and other things are done on a site. As you can see, one walk per lineal foot corresponds to one foot candle along that path, 1.5 to 1.5, 2.5 to -- or, yeah, 2.5 to 2.5, and so on. The numbers happen to work out that nicely in this particular case.

Again, same caveat. I redid models and I confirmed that these are conservative numbers. You can exceed these values, and these values are consistent with IESNA recommendations.

Building entrances, .5 foot candles in both lighting zone 1 and lighting zone 2, which corresponds to 5 foot candles average underneath a building canopy, or with some lighting system that, if there is no building canopy. Same issue, Nancy did certain calculations -- who did the calculations? Lisa did these calculations, and then I repeated them, and the numbers lined up again; .7 gets you 10 foot candles, and 1.0 gets you 13 foot candles.

One of the reasons why these numbers do not necessarily remain linear is because the types of light sources we can use as the luminance

levels goes up, allows us to move from less efficacious sources into more efficacious sources. For example, to put only 5 foot candles under a building canopy you're probably using compact fluorescent lamps that are under 18 watts, or up to 18 watts, whereas as the light levels get higher you can move into either low wattage HID or higher wattage compact fluorescents which have significantly improved efficacy.

The next one is non-sales canopies. We've tried to separate out, as we've reported to you previously, the difference between sales canopies and non-sales canopies. Canopies are very similar to building entrances, and these, in this particular group called general values, you can call something one and you can call it another if it fits the rules. So, for example, a building entrance would be adjacent to a door, but if you got a canopy and, you know, you can use the canopy values for certain things. You can use, you can trade them off back and forth.

In this case of the building entrances, you can see you get much higher allowance than if it's a canopy, non-sales canopy without an entrance. Note here, too, that the values go up

from 10 1 foot candle to 5 and 10 foot candles, with corresponding power densities. Also note that the power densities here, if the foot candle concept is the same for, or criterion is the same for two values, the power densities are the same for the two values, pretty much.

Again, I've taken the more conservative approach. If one of them required a little bit more power than the other, I gave both of them slightly higher power, so we're assured that these values can at least be met by the designs.

And we have vehicle retail sales lots. This is a particular area where extremely high light levels can be achieved. And so you see over here, 50 foot candles is the highest recommendation under lighting zone 4 by the IESNA, and that requires two watts a square foot. Again, conservatively modeled.

Slide, please.

These are use it or lose it values. You cannot trade these off. You cannot say I'm going to trade off the building facade against the parking lot. You can trade walkways or bikeways against parking lots, but you can't do it here. In this case, building facade plus exterior sales

frontage, such as for car lots, neither one of them, or sales canopies, none of those is permitted under lighting zone 1. It's believed that in a extremely natural environment, that these are just inappropriate applications of light.

With building facades, beginning with lighting zone 2, you get 0.18 watts per square foot, .35 and .5. These were numbers that were originally provided in our previous report. I did not recalculate these. However, they correspond fairly well with the findings of ASHRAE IES 90.1, so I felt there was a reason to dig into them at this time.

Exterior sales frontage. This is calculated to address IESNA RP201. The values are not allowed in lighting zone 1 and lighting zone 2. This is frontage along a street or road, facing the road, as you would with vehicles that are for sale. Your, the allowance for lighting zone 2 is 25 foot candles on the front row. Lighting zone 3 is 50, and lighting zone 4 is 75. Again, these models were conservative. I found that these levels could be exceeded with the gear that is on the market today. My models were done

specifically using gear that is literally called car lot lighting systems by a major manufacturer in that marketplace.

Service stations. Mazi can go into some of the details about this, but we had shown you some values previously that were lower. After some give and take back and forth with representatives of this industry, we have come to the point now where the highest level that's allowed, two watts a square foot, corresponds to 50 foot candles being permitted for lighting zone 4, for essentially gas stations; 25 foot candles for lighting zone 3, 15 for lighting zone 2. Because gas stations do occur in somewhat natural environments, 10 foot candles being the amount that's allowed in lighting zone 1.

We, I added in a row here for without canopy. The values are just slightly different. This is, again, fairly consistent with some of the things we've talked about before, but I wanted to make it clear that with and without canopy needed to be provided for. All other sales canopies, we begin with lighting zone 2, and these mirror the values for the retail gas, but they're shifted up one zone. So the peak that you can reach is 25

foot candles.

Landscape lighting. This is a new line that's been added. This was brought about by the fact that when we, the original intent of hardscape, well, the general site lighting allowance that I mentioned earlier, was to provide for walkways and bikeways, and the landscape lighting around them. Because in re-investigating this, I felt that it didn't work correctly, we needed to add back in an allowance for landscape lighting because it would then need to be taken independently.

Again, it's a use it or lose it allowance, and it's based on watts per square foot of planting areas that are appropriate for this.

For some odd reason, the values for signs are missing off of this. Charles, is there a reason why those --

MR. ELEY: No, this is the slide you gave me.

MR. BENYA: Oh, okay. I'm going to have to refer you to page 81 of the document for the values that are, that have been placed in for signs. For some odd reason, it didn't make it onto the slide, it didn't copy over.

These are based pretty much on the analyses originally done by Heschong Mahone Group. We have been doing an awful lot of work. We've had, we had a conference last week with representatives of the sign industry to review some of their concerns about this. We are reviewing these numbers. Right now these numbers here are calculated, but they may be subject to some corrections as we give and take some of the practical solutions for signs.

You notice that we, however, have proposed a very low allowance for internally, for signs in the, in lighting zone 1. I guess we increased those, didn't we. Okay, we increased those. So what's up here on the slide is not correct. In lighting zone 1 we do have allowances for those signs.

Slide, please.

So, to summarize, since we last saw you with this information, I've personally reviewed most of our numbers, challenged them, readjusted some of the philosophy, and now I believe that this draft now solves some of the problems that came up the last time we showed this stuff to you, and I think it's in pretty good shape. And it's

ready for the type of discussion that we plan on having today.

MR. FLAMM: Thank you.

Okay. I'm going to get, change the sequence just for a second here. I have somebody who needs to catch an airplane at 3:00 o'clock, so I'm going to ask Richard Bagni to come up and, so he can make his airplane.

MR. BAGNI: Richard Bagni, Aquity Lighting Group. That would be composed of Holophane and Lithonia Lighting Corporation, which is of considerable size, and on behalf of the company, since I represent them here, I wish to commend the Commission and all of your consultants for an excellent job in putting together a very difficult subject in a very, what I think a short period of time.

I have some handouts which I don't know, can you just kind of pass them around? They're printed on both sides, to save energy. And I notice, because they're in a slide format, that you don't have an overhead projector here. That also saves energy. So I'll just kind of expound from the slide.

In addition to the comments made by

Cheryl English, whose name I think is pretty well known to you, the vice president of Aquity Lighting, she has made her comments by letter. I'd like to address one segment, one what I think is a very small segment of the outdoor sign business. And as it was stated here, I call the backlit signs, you call them sign lighting. Panel signs. Okay. Thanks for the correction. So I'm going to talk a little bit about panel signs, and basically options and considerations for the panel.

And what I cover here first is what you've already covered, but it's kind of a quick run through here of basically what is currently available for this kind of lighting application, and that would be T12HO, T8HO, metal halide, pulse start metal halide, and inductively coupled lamps, which I don't believe has been covered in this report, in your report.

The pros and cons of each, the T12HO is basically the standard practice for this industry right now. T12HO lamps have come about basically as a result of a little bit of lighting science, but a lot of learned art, a learned art being a lot of experimentation on what works and what

doesn't work. The lamp is temperature sensitive, but it has, it provides good uniformity if it's laid out correctly inside the sign cabinet. And when I say correctly, there is a bit of a formula, but for all practical purposes these lamps go on 12 inch centers. And they go on 12 inch centers because uniformity, which is the quality aspect of what we're talking about, there are two aspects of lighting, quantity and quality.

The quality part of it is paramount to the sign industry. Why? Because, obviously, if somebody's going to design, take the trouble to design a graphic and have an advertising program that they're going to put out and spend, I think the national figure -- not, I don't think, I know the national figure is estimated at about $5 billion for the outdoor advertising industry. That has nothing to do with, like electrical, because electrical is a small part of that, very small part of that. But if they're spending this kind of effort for this market, then there's obviously a lot of thought going into the colors, the type of sign, and that kind of thing.

So basically, a standard has evolved through this combination of things that I'm

talking about, a kind of seat of the pants, if you will, a learned art, and some technical expertise.

So essentially what we're talking about here is if you get to a T8HO, which is really a, in the future might be a better solution because it's a high efficacy lamp, it has a relatively short life, as T12 fluorescents do, as most fluorescents do, and I say relatively relative to other light sources that are available. But we haven't found anything in any publication, any lamp publication, that states that it's a good lamp to be used outdoors inside of a sign cabinet, in terms of UL 1572, what location label, that kind of thing.

I'd like to ask the panel if in your suggestion, I believe one of your consultants suggested that, that your lighting zone recommendations, which we'll confine to lighting zone 3 and lighting zone 4, being, I think, LPDs of six and eight respectively, is available with current technology. I'd like the panel to try to find some models to show the industry that this is a fact. We can't find any way to get what we need to get with that kind of power intensity.

But in any event, let me get to that

later. We've covered metal halide, all pulse start and standard lamps. They have a relatively long life, low maintenance, good uniformity. And the kinds are higher initial cost on shallow cabinets. Why shallow cabinets. Well, that would be a solution for fluorescent, really. Anything 18 inches or within is a good solution for fluorescent, because, frankly, metal halide has such a high output that there would be a lot of bright spots, and that's the quality aspect we're talking about.

If you can't have a graphic that is easily understandable, well, then tab traffic auto bureau says 12 seconds is all you have to get the message, then what's the sense of lighting it at all, at night. During the day, that's kind of a no brainer. I'll cover some of the other aspects in a minute.

Let's get to the last lamp, which is this, what they call inductively coupled lamp. There are two companies presently, Philips and Osram Sylvania, that offer a new type of lamp called inductively coupled lamp. It's a, it's basically the ballast, if you want to call it that, it's like an inductor, and it actually

excites phosphorous inside the lamp, and it has basically a very, very long life. There are 100,000 hours.

For the sign industry, that sounds good. But after 100,000 hours, since they're only burning ten hours a day, by the time you have to change the lamp the sign will have blown over, or the graphics will have been changed, and somebody will have ruined the whole layout.

The problem with that lamp, also, is it has relatively poor efficacy. When I say relatively, I mean compared to other light sources. An example, 80 to 85 lumens per watt. It's not bad, but metal halide will provide over 100 lumens per watt in lamp efficacy.

So some of the conclusions. Basically, I have three major conclusions here. We think our industry responds to market demands, and is self regulating. What I mean by that is, what we mean by that, is the demand of a company like ours is that we always provide the best bang for the buck. That means low energy, the most illumination for the price that they're being charged, and, above all, on signage, uniformity.

Why uniformity? You can reduce the

light level all you want on a standard billboard sign. But if the uniformity suffers, you can't get the message that people have spent a lot of money trying to get you to understand.

In the case of backlit signage, or interior illuminated signage, there's another problem here with your LPD figures. The standard practice right now is LPDs from 16 to 18, would you believe. If you take any kind of an interior illuminated sign today, and use the formula which is basically 12 inches on center, and use high output lamps, you're going to have lighting power densities in the range of 13, 14, to 18 lumens per watt. I beg your pardon, watts per square foot.

Now, that doesn't, that doesn't really apply to deep signs, either, because the deeper the sign gets, the more need you have to put another row of lamps behind the other face. So if it's a double face sign, that figure could be doubled. We're talking maybe 32 watts per square foot. Now, that's a great departure from six LPD and eight LPD in zones 3 and zones 4. So I'd like really to see, personally and company-wise, some kind of a model from the group that shows that a common technology can accomplish the things that

are set down.

We think the proposed standards are too severe for current technology to meet by June 2003. Of course, we know it doesn't go into effect until 2005, but I think June 2003 is kind of a cutoff time for input from people like us. I don't know. It's also estimated that California is approximately 11 percent of about one billion of a $9 billion lighting industry nationally. And the overall outdoor lighting market here is approximately three and a half, $4 million, which is less than one percent of the total expenditure for lighting. We've researched these figures. We can research them again. I guess the point is that even if it were double the number that we're talking about, it's still going to be less than one percent.

So why, I understand the need to regulate, but why regulate such a small industry that, that really can't move much in terms of layout of lamps and that kind of thing. Yes, you can reduce the lumen output of a lamp. You can keep them on the same centers, use low wattage lamps, but the problem then becomes you have a graphic face where the lumens, the lighting has to

go through two surfaces, the inside surface, a coat of paint, the strata that's in the middle, it's kind of a substrata that's kind of a laminate, and then the paint on the outside. So by the time you get through to the other side, you've actually, you've brought down the amount of luminance that you get, basically luminance is what we see. Therefore, does the graphic designer have to change the colors because colors, the hue of colors changes when the amount of light going through them gets lower or higher.

So you get somebody like, well, the California Energy Commission. You people are probably very proud of your logo. Campbell Soup is proud of their logo. Everyone that has a logo, Aquity brands, wants to have that logo represented in the correct colors, the correct amount of light, and the correct quality.

So basically, what I'm saying to the panel is, please consider that there's not much room for movement in terms of not only lowering the light level, but also separating the lamps to the point where you start to get shadows in the middle, and poor illumination quality.

That's all I have to say. Are there any

questions?

MR. FLAMM: Mazi.

MR. SHIRAKH: I just wanted to mention briefly that lighting power densities that you're seeing for signs and billboards, we are actually in the process of working, we're doing it with representatives from the California Sign Association and California Billboard Association. Again, as Benya mentioned in his presentation, this is work in progress, so.

MR. BAGNI: Excellent.

MR. BENYA: I do have a few comments on the other hand, that need to be remembered. One of the things that happened 20-some odd years ago, when the Energy Commission first started implementing Title 24 and the code, was that advances were made in technology as a result. My investigation, one lamp that was brought to our attention by your colleagues in the sign industry was the F120T12. That lamp, which generates 11,500 lumens in a 10 foot long lamp, it's a cool white phosphor, the ballast is a sign ballast made by several manufacturers.

Just some quick calculations. If we were to take a 10 foot lamp and make it two five

foot lamps, we can use five foot standard T8 not high output. That would increase the lamp life. As far as ballasts are concerned, the ballasts are already outdoor rated. They would have to be put in an outdoor enclosure, but that doesn't, that's not that hard to do. And suddenly we're looking at a ballast that instead of gobbling up 268 watts, we could be running it closer to 80 watts or so, and generating 80 percent of the light. Not only that the color would be better, because it would be using triphosphors and not the horrible cool white phosphors, that's all they make in the F1 -- or, F120T12. That ballast also starts those at minus zero degrees Fahrenheit, whereas the F120T12 does start at minus 20. However, for the majority of the population in California, minus 20 never occurs.

So there's actually a very good opportunity for technology improvements that if you space, if you use this technology and you space the lamps, rather than 12 inches you put them 14 inches on center, you'd be at six watts a square foot rather than the 26 watts you're at right now. So there is a huge room for improvement in the sign industry, and one of the

reasons why we set out to deal with it is because improvements that significant that can be made, should be made.

MR. BAGNI: Excellent. One comment I would make about the ten foot lamp substituted by two five foot lamps. Where the five foot lamps join, you have obviously two sockets, you've got a linear situation. There are two sockets. There would be no doubt a dark spot in that particular area. Usually what they do is they would take two six foot lamps and they would overlap them. So now you're adding a little bit of wattage.

Well, that having been said, if you try also to space lamps instead of 12 inches on center, because of the power density and so on, and bring them to 14 inches centers, I can almost guarantee you that on most graphic faces that I know of, especially those with light grounds, you're going to have dark spots. You're going to see, you're going to see the lighter streaks against the darker areas of that graphic.

So you're talking about a physical limitation here that's probably pretty, pretty restrictive.

MR. BENYA: Well, if you put them 12

inches on center, you suggest that then we go up to seven watts a square foot. Long way from 26.

MR. BAGNI: That's a definite improvement. But I hope that the panel will consider also alternative sources, particularly as the sign gets deeper, 18 inches and above, metal halide has a very, very good application for that type of thing. We have developed units that actually mount on the perimeter, and throw the light into the cabinet, reducing the number of stem mounted, you know, the old-fashioned stem mounted bare lamp HID with a shield in front of it. We can reduce the wattage, we have the pulse start technology now, so that's an alternative source that can be used on deeper cabinets.

MR. FLAMM: Okay, thank you.

MR. BAGNI: Any other questions?

MR. SHIRAKH: I have one question. You mentioned that T8s are not rated for wet location.

MR. BAGNI: We haven't been able to find anything that says --

MR. SHIRAKH: Jim says there are.

MR. BAGNI: Okay.

MR. BENYA: We, there's a lot of outdoor lighting gear employing T8 lamps. It is standard

on the market and has been for 20 years, 15 years, at least. The ballasts are outdoor rated. Again, the, whether the ballast is weatherproof is not the issue. You can get weatherproof ballast for T12. You cannot get it for T8. However, the cost of the T8 ballast plus the weatherproof enclosure is significantly less than the T12 magnetic weatherproof ballast.

So, you know, the arguments, you know, my conclusions upon the research that I've done so far is this is an industry whose interest in energy efficiency is stagnant, but not much has happened. That improvements could definitely be made, you know, almost, you know, three or 400 hundred percent improvements could be made, and should be made. And I think working together, we can set those values.

MR. BAGNI: I agree with you.

MR. BENYA: We're very prepared to do that. I think we all are.

MR. BAGNI: We are striving to do that all the time.

MS. SHAPIRO: Mr. Bagni, I have a question. On the last of your conclusions, when you talk about the outdoor lighting market being

this in California, are you talking about the cost of energy, or are you talking about the cost of fixtures? What are you talking about when you say there's a $9 billion lighting industry nationally? What does that mean?

MR. BAGNI: The size of the market in terms of product sold.

MS. SHAPIRO: Product sold. Okay.

MR. BAGNI: So that would be lamps, ballasts, you know, anything pertaining to lighting.

MS. SHAPIRO: Thank you.

MR. BAGNI: Any other questions?

MR. PENNINGTON: Yeah. I think I understood you correctly to say that you saw a big potential for T8s to be used in this situation, but there were, there are these limitations on the currently available T8s. Are the companies that you represent working to try to reduce those limitations?

MR. BAGNI: Absolutely.

MR. PENNINGTON: And so when would we expect products that would overcome these limitations?

MR. BAGNI: I think we may be able to

catch up by 2005.

MS. SHAPIRO: And you understand that's when it would become effective.

MR. BAGNI: Yes, I do.

MS. SHAPIRO: Okay.

MR. BAGNI: That's why I mentioned the year.

MR. FLAMM: Okay, thanks.

MR. BAGNI: But catch up is what we're playing here. Anybody else?

MR. FLAMM: Thank you very much.

MR. BAGNI: Thank you.

MR. FLAMM: Go catch your plane.

Okay. Now, as Commissioner Pernell had stated at the beginning of the afternoon, that we didn't want to belabor the legal issues. However, I'm aware that some of you have traveled from out of state. We do not want to spend a considerable amount of time on this, but I would like to offer you a few minutes to make that presentation. Do one of you want to -- and please identify yourself.

MR. BOREN: Commissioner Rosenfeld, staff, and consultants, my name is Kozell Boren, and I'm the Chairman and CEO of Signtronix. We're

a 44 year old California company located in Torrance, California. We employ about something over 300 people. And I just flew in from China, and it's 5:00 a.m. in China, and I'm suffering a little jet lag.

COMMISSIONER ROSENFELD: But you'll wake up pretty soon.

MR. BOREN: So I'm going to, you know, I've been wanting to go to bed for about five hours. Anyway, you'll be happy to know that I only have about eight minutes to speak up here.

I was motivated to offer testimony today because for the past several years I've championed the causes of small business in America. According to the United States Small Business Administration, small businesses create 75 percent of all of the new jobs in California -- or, across the country. For those of us who may remember, McDonald's was once a southern California mom and pop business. And today, they have 26,000 locations. I understand and appreciate the need and motivation to conserve energy. We applaud the Commission's effort.

Our company is also a large user of electricity in Torrance, California, and we have

made several measures to reduce our consumption. We have people that start at 5:00 a.m. that used to start at 8:00 a.m., to run energy, high energy pieces of equipment. We have reduced the number of light fixtures in our 70,000 square foot facility to help save energy.

Our company, Signtronix, has invested hundreds of thousands of dollars to better understand the functionality of signage, and especially, as it applies to small businesses. We are a company of innovators. We're constantly in search for methods to reduce the cost and increase the functionality of signage. The beneficiary of our efforts are the small businesses of California. Every city in California has areas that they set aside for commercial zones for, to offer the goods and services to the community. I would extrapolate from that that if you set aside a commercial zone, that you would also want these businesses to succeed. And signage, according to the U.S. Small Business Administration, is the most effective, yet least expensive form of advertising that a small business can use.

Signs index the business community. They're the commercial speech of the street. I

would say from my experience that signs for small business is almost the only affordable form of advertising. In our quest to better understand how to improve the chances for success for small business, we sponsored a survey over the last five years. We asked 385 small businesses that are just installing a new sign to help us with a survey form, and they asked 5,800 new faces that they'd never seen before, how did you learn about us. And 48 percent of the 5,800 customers said the sign.

Our company's also given signs to small businesses for the purpose of ongoing case studies. In exchange for a free sign, the business owner must agree to share with us financial information from their accounting firm. These case studies have shown incredible results when a proper sign is installed. One case study that I'm really familiar with is fairly close to my home.

Four years ago, we gave a sign to a small business, and according to their CPA firm, they did $260,000 the previous 12 months. Today, their annual sales are over $850,000. And I bring this up because there are just many, many, many

case studies about the effectiveness of signage, and its impact on small businesses.

You know, small businesses have a really tough time competing with the big box stores. Starting up they're usually undercapitalized, yet they're the incubator and all for the future businesses of California. To eliminate these signs would be saying no to the entry level small business, and saying no to freedom of commercial speech. Signs are an indispensable part of commercial zones if you want them to succeed.

I know that the Commissioners' challenge, in fact, the mandate, is to preserve energy. But we ask you to face the challenge with also recognizing and addressing the challenges of a retail economy. Signtronix recently obtained the entire legislative history of Senate Bill 5X from a firm of lawyers here in Sacramento called Legislative Intent Services. That helped us put the Commission's mandate into perspective. The purpose of Senate Bill 5X is to conserve energy, especially during peak hours. It also says that the cost of the realty cannot exceed the savings.

Now, I've been in the sign business for 44 years. We bill $30 million worth of signage

per year. We use the best, most efficient technology available. And I know of no alternative lighting system that will provide functional illumination for the small business in California to identify their business. Nowhere in the legislative history do concepts such as light trespass, light pollution, or glare, appear in the deliberations of SB 5X. I believe the concept of multiple lighting zones within the state will create dysfunctional signage, and create a new layer of zoning regulations that further burden the small retail business. Most small businesses simply do not have the resources to compete with the deep pockets of larger businesses and national franchises.

I might also mention, folks, that I read somewhere in the last year or so that big box stores only leave about eight percent of the revenue in the community. Small business leaves 65 percent in the community.

In addition, the creation of lighting zones will create dysfunction and burdens upon local government. The Commission's draft regulations place the enforcement burden upon local authorities without providing any additional

funding for enforcement. And I say that this creates dysfunction because of a recent experience that I had in the city of Los Angeles.

The city of Los Angeles invited us to present ideas that would improve the esthetics of the older communities in the city. Now, Los Angeles has 460 square miles, and as a result of these discussions, we learned that the city of Los Angeles has over 340,000 illegal signs. And one reason for this is that they only fund four full-time inspectors and two part-time inspectors. And I believe that the zoning that's proposed, the four layers, and the types of lighting that you're proposing, is unenforceable because they don't have the armies of people that it would take to go out and enforce it.

The city of Los Angeles has 340,000 illegal signs. This, this will drive people toward illegal signage, and the entry level mom and pop, maybe with $25,000 of capital, they will then, they're not even aware that, of these things that they need to do.

You know, as an entrepreneur, the first sign that I ever built, I was 12 years old. And my dad bought a case of oranges, and on the back

end of it was about a 18 inch by 18 inch square, and I borrowed one of his paintbrushes and built a sign that said bicycle repair. And that was my first entrepreneurial experience. I did ten cents worth of business in 30 days, and went out of business.

But signage, folks, is not something where, where most of the small businesses really even are aware of it. And there's no, the people out there, you don't have the people to enforce it.

So I ask you to keep in mind that signage is not a light fixture. I think this is critically important. Sign, a sign is not a light fixture. Signage has an illumination system inside of that that illuminates commercial speech. Commercial speech has constitutional protection, and when you start playing around with signage, one has to be sure that they're meeting those constitutional standards.

I'm 72 years old, and have spent 44 years in the sign business, and the illumination that you're proposing is not a functional or an economical substitute for the technology currently in use. I'm told that our company is the largest

purchaser of outdoor ballasts in the state of California. And for those of you that may not understand the function of a ballast, a ballast is a component of the lighting system. Without the ballast, you can't fire the lamp. Without the lamp, the ballast is of no value. So it's a, it's a component.

We asked our suppliers, Alanson International of Canada, and Universal Lighting Technologies, Universal is huge, employing tens of thousand people, probably. They have a very large staff of technical people. And I called them, knowing that I was coming here, and I asked both companies to use their technical people to advise us if there was a -- and I gave them a draft of your proposal -- and I asked them to read that and see if there was anything that they have that they could supply, and also to give me an opinion as to the functionality, if they did have it, with those lighting standards, if it'd be functional.

And the letter, and I have two letters, which is part of my testimony today, and both replies was that signage with the wattage that you're proposing would be dysfunctional, and that there is nothing out there right now that would

allow us to do, to illuminate the signs.

I think there was a stretch in the interpretation of Senate Bill 5X up to this point. I believe the focus of glare, light trespass, light pollution, and lighting zones, is outside of the intent of saving electricity during peak demand. This type of regulation will create terrible additional burdens on the small business of California. I believe the proposed remedy, as presented thus far, is worse on the economy of California than the problem it intends to fix.

Because of this fact, and the additional administrative burdens these regulations would place upon sign users and local governments in the enforcement of the proposed lighting zones, we ask the Commission to discard the entire notion of creating a new layer of zoning regulations for lighting zones. And to have standards based on light pollution or glare or issues, I mean, it challenges me to find, to understand why people that are asked to save energy get off on the subject of lighting pollution, or glare, or --

Anyway, as a young man, one of my mentors would occasionally remind me that cozy when you're on a wrong road, it's never too late

to turn back. And I believe very, very sincerely that the proposed solutions would have a tremendous negative effect on the small business community of California, and I believe it would have an awesome unsupportable, unenforceable burden on the cities that are asked to do it.

I want to thank you for having the workshop, and my opportunity to present my thoughts and feelings. Thank you.

MR. FLAMM: You're welcome. That was approximately 15 minutes.

MR. BOREN: Was it? I'm sorry.

MR. FLAMM: Yes. And I know there are others here who would like to make some legal cases, but I really think that we need to get moving.

COMMISSIONER ROSENFELD: Gary.

MR. FLAMM: Yes.

COMMISSIONER ROSENFELD: It seems to me there are two completely different issues here. One is a technical issue. And we have an absolute contradiction. You say basically that Jim Benya is not correct when he says that he's trying to give us the same intensity of light with better technology. And it really just comes down to

that. Your view is that we're reducing the effectiveness of your signs, and Jim Benya's view is we're giving you exactly what you want, but cheaper.

Now, how are we going to resolve this technical discussion?

MR. BOREN: I'll yield to the consultant.

COMMISSIONER ROSENFELD: Jim, how are we going to get this straight?

MR. BENYA: Commissioner, the problem is we have an industry that has standards. You've developed standards over the years. They work for you. They have worked for you, and they've been successful for you. They've been successful in meeting your customers' needs.

The problem is, it's like I think we suffered some 25 years ago. There are new technologies that there's been no impetus, there's been no real reason in your industry to really have them change, and so no changes have occurred. I personally believe that I'm on very solid ground here by, these are fluorescent lamps and ballasts. Your consultant, or your supplier here, made some good points. I refer you to Bill Brosius, from

Magnetic Products -- I assume this is universal.

But Bill makes a few points. Basically what he's saying is, is that presently, the technology that's used is standard technology. It's the cool white lamps, it's the T12 technology, it's magnetic ballasts, and the products that have become made over the years and standardized on over the years, and the sign standards, UL and others, that have evolved to match that, have been stagnant. And you're saying you can't do this because the part doesn't exist. The socket doesn't exist. We ordinarily don't do this, we ordinarily don't do that.

And what I'm saying is, yeah, you ordinarily don't. But I believe that there is, what I'm showing in my calculations is a 20 percent reduction in mean lumens, plus 70.2 percent reduction in power. That is absolutely obtainable. We have been doing it for 20 years in interior illumination. So it's reliable, robust technology, and it simply needs to be adopted for the sign industry.

So I stand on my numbers.

MR. BOREN: I think he's speaking of, and I'm not qualified to discuss the products in a

highly technical way. But the T8 lamp and taking the -- that was developed for internal, you know, lighting. And, yes, it could be adapted. The ballast itself could be put in an outdoor can and meet an outdoor standard. But that still doesn't, it's kind of like, you know, I'd like to see your models if you've designed a sign that would function under your conditions. I don't believe it will.

I would, I would say, sir, that, Commissioner, that there's been tremendous progress made in our industry in the last 25 years. And I can say to you --

COMMISSIONER ROSENFELD: Specifically, have your lighting intensities come down in the last 20 years?

MR. BOREN: Well, there has been, LED is one of the areas where, like this, the freeway signs, the Amber Alert, that's a high energy consumption sign, using a 25 or 40 watt spot. Today they use LEDs that's probably one-fortieth as costly. LED signs are used in many, many ways.

But I do not believe that, and I would tell you that if I could reduce the cost of our products, we do 30 million a year. We use about

$9 million worth of material. If I could reduce that 30 percent, I'd knock the door down. But I don't believe that that's possible. I don't believe that, and nobody in the, in the industry seems to think it is, either. It's only those people that maybe can sit down and pencil it out. But that's a long ways from, that's a stretch from getting it to function.

COMMISSIONER ROSENFELD: Jim, let me ask you. Are there physical examples around with the intensities that you're recommending, which we can show?

MR. BENYA: I'm sure we could build a sign box that would demonstrate that this, this works. I spoke to one of the largest manufacturers of sign lamps the other day. I asked them has there been any demand for T8 technologies. No, no, nobody really orders any of that stuff. Yeah, he said, there's a demand for real -- or triphosphor. Well, you know, we talk about it, but nobody really wants it. You know, how about electronic ballasts? Well, no, nobody really wants to spend the extra money.

I mean, the same, same resistance we received 20, 25 years ago in working on the

interior lighting standards, the same resistance I'm hearing in this area. Technology, sign manufacturing techniques may have improved. LEDs and other technologies have worked their way into the sign industry. There's no question that it's a big signing industry, and, you know, interesting things are happening. But in the fundamental illuminated, internally illuminated box, which is a, I would submit, probably extremely large percentage of the small businesses you're talking about, if that's what they can afford that's what they order.

MR. BOREN: That's correct.

MR. BENYA: I would submit that there hasn't been any real effort to improve the efficiency of these lighting systems because there's been no demand. There's been no code, there's been no requirement, there's been no demand. On top of that, you know, although whatever it costs you to manufacture a product, there's a separate issue, what it costs the owner to actually operate the product. And again, I'm --

MR. BOREN: They are very, they are very fuel efficient now. The question --

COMMISSIONER ROSENFELD: No, wait a minute. They may be fuel efficient, but if I listened to Jim Benya we can cut out and save 70 percent of that. We can make them very fuel efficient.

MR. BENYA: With a 20 percent reduction in light, it's 70 percent reduction in --

MR. BOREN: Then you would, you would probably create dysfunction. And you would probably have --

COMMISSIONER ROSENFELD: No, I think we're just improving the technology. That's a point I just can't accept.

MR. BOREN: But see, but one of the ways that he does that is by reducing the lighting, the back lights of signage.

COMMISSIONER ROSENFELD: Twenty percent, you say.

MR. BOREN: And again, this is a commercial speech.

MR. BENYA: Actually, it's not changing the speech, it's simply reducing its intensity.

MR. BOREN: If you can't read it, that's changing it.

COMMISSIONER ROSENFELD: That's, but I

really resent your suggestion that we're fixing it so you can't read your signs. I just don't think that's fair.

MR. BOREN: That's a stretch, sir, to say that you can't read it.

COMMISSIONER ROSENFELD: That's what you implied for 15 minutes.

MR. BOREN: Well, I'm implying that as presented, that you would have a dysfunctional sign that would drive people to use illegal signs, and, and I do believe that there are many, may reasons why signage, signage is used at night. That is not peak time.

COMMISSIONER ROSENFELD: So we're trying to give you the best signs that technology can give, and I think kind of what we need to do is to get some examples. And we'll get a donation from -- and we'll get, we'll get some signs made by some reputable new-fangled outfit who knows the new technology, and we'll put them up side by side and see, you can make your -- sir, that they're good, healthy signs.

MR. BOREN: I accept that.

COMMISSIONER ROSENFELD: Great.

MR. BOREN: And I would, I would hope

that consideration be given to the California small businesses, the burdens that you're placing on them. One of the mandates is that the solution is not supposed to increase the cost.

COMMISSIONER ROSENFELD: We're only going for life cycle cost optimization.

MR. BOREN: Well, are we going for a point that is not -- the governor says I don't want the remedy to exceed the cost.

COMMISSIONER ROSENFELD: Our ground rules are that the life cycle costs of the sign shall be improved. That's why we're here, not to charge any, cause any extra expense.

MR. BOREN: Would you also add that to what is, what it's going to do?

COMMISSIONER ROSENFELD: Well, of course, we'll have data on that. Sure.

MR. BOREN: Okay. I'm sorry I'm taking so much time.

COMMISSIONER ROSENFELD: Thank you very much.

MR. BOREN: Thank you.

MR. FLAMM: Thank you. Mazi.

MR. SHIRAKH: I just wanted to point out, the lighting power densities that you saw

only applies to internally illuminated panel signs. There are other type of signs, such as channel signs, where the sign is actually the shape of the letters. And LEDs where, would be outside of the lighting power density requirements. The only requirement for those signs would be a source efficacy which should be greater than 60 lumens per watt.

So there is nothing to preclude small businesses in any lighting zone, for that matter, to use one of those technologies, and there will be no limitation based on lighting power density, only a source that just you would apply.

MR. FLAMM: Okay, thank you.

Mr. Claus, would you like to come up and speak, and could it make it done in a few minutes?

MR. CLAUS: Robert James Claus, 22211 Southwest Pacific. And I certainly am sympathetic to Commissioner Rosenfeld's view that this shouldn't be about technical subjects. And I'm sympathetic to anything that's been said here. And let me tell you why.

The sign industry runs on technology. The problem is if they put up with technology that doesn't work, not only won't they get paid,

they're likely to get sued. Because while they're selling advertising effectiveness, they are really, really selling that in the cheapest form available. There has been multiple change in plastics, there's been multiple change in lighting. But continually, the bright fellows with good educations have bright ideas. And beginning in this state 20 years ago, we stopped presuming regulation of signs was constitutional.

Now, that plays very much into what you suggested. And I think you've come up with a wonderful solution, because I'm sure you fellows are smarter than the sign industry --

COMMISSIONER ROSENFELD: No, we didn't say that.

MR. CLAUS: -- and I'm sure that you can come up with better solutions than they can, and, in fact, legally that's what you're required to do. You no longer can simply say, quote, I'm sure we could build a better box, end of quote. You're required to. Intermediate and -- what's been brought in here, and the last two supreme court cases, unless the attorneys we work with have it clear that's not a law.

Now, since I work so closely with the

sign industry and so closely with the advertising and marketing industry, and since I really think they're really an efficient group of people, based on the retail price of goods, 15 to 50 percent cheaper than any place else in the world, and since we know signs are the key point in holding that low, since I know that the manual on uniform traffic control devices is the controlling sign code, in this case the primary in our state, you're violating those ten percent rally funds. And I know they will use your approach of lowering light because it creates signing deficiency, which creates accidents. I have some reason to believe you're wrong.

And the real way to solve this is to build this box that's much better, take it to Las Vegas and turn it on for nine months, and find out how long it runs. And you'll learn what this industry's trying to tell you. They are concerned, first, with advertising and communication effectiveness. They have to be. That's what they're selling. That's how they sell it. And thank God for the U.S. Supreme Court, that they have recognized your effort to regulate signs is different than your regulation of the

site. And activity can be regulated on a rational relationships. I believe, I think they said speech can't. It's intermediate, not strict scrutiny. And if Justice Thomas is right, God bless him, it's strict scrutiny.

Now, all I'm suggesting here is very simple. I'm hearing things that I go to the trade shows, I go to the federal highway, I go to federal highway safety, and I hear things from those people, not your people like Dick Schwab and Travis Brooks, that spent years developing the best national sign code in the world and probably not understood what they're doing. But if they do, you're taking the wrong approach.

They don't know all the zones. You can't do that, you get signing deficiency. We already have 22 percent of the accidents occur on the interstate occur, according to a Pennsylvania study, occur because of signing deficiency. Now, my problem is this. Logically, as Mr. Boren said, if readability and conviscuity mean anything, and those are the two measures you're talking about, readability and conviscuity, as you try these new lighting techniques if, in fact, they don't have the same output of light, you're going to need

bigger signs with different density intensity hue on the graphic symbol or number or letter you put on that sign to be read.

Now, if that's your logic, we aren't going to save any energy, because you build a bigger device and get the same message. At least that's what federal highway safety found out.

Let me get on --

COMMISSIONER ROSENFELD: Excuse me. Could I ask a question. I didn't realize that we were into regulating highway signs.

MR. CLAUS: Well, you're certainly not, but the principle you're talking about is exactly the same.

COMMISSIONER ROSENFELD: But, I'm sorry, I have a little concept. When I'm trying to choose between Jimmy's Pizza and Chicago's Pizza, it just doesn't seem like a big safety issue to me.

MR. CLAUS: It doesn't?

COMMISSIONER ROSENFELD: Can you explain that a little bit more?

MR. CLAUS: Well, if you're driving down the street and you seeking to turn into an establishment, if you can't read the sign you've

got a safety issue. You also have a serious economic issue. At least that's what transportation and aging society tells us, which was done by federal highway safety.

COMMISSIONER ROSENFELD: Okay, I get you.

MR. CLAUS: I mean, I wouldn't discount federal highway safety office. I know that agency doesn't know too much about the subject. But the problem is, you hit your finger right on the problem. You have a different standard here, and legally, we're fortunate that we can kind of be from Missouri. Show me, don't just tell me it's true. Because I know for a fact that for 20 years, when the first incandescent light bulbs were built in electronic message centers, they could only build time and temperature units. They couldn't build anything else. You couldn't get them sophisticated enough because of the electronics.

The moment this industry could change the lighting source and the electronics, they did. But I know they only changed it when it delivered the advertising message effectively. I know that Section 6 in the MUTCD only came into existence

and changed and used electronic message centers as warning devices when they could deliver the message effectively. And the challenge you have here is really a simple one.

In this case, where you slip from an activity to speech, and I know this is a disconcordant message, and I know it's a disturbing message, is you're really in the position where legally you can't say I think. The device has to be up, and it has to go under.

Now, Hanson and Stanford developed early on the -- control. We've used pupillometry extensively. So we've measured the readability of our signs. We've measured as traffic auto bureau and a number of other people have. Any time we can find something that saves energy and is effective, we'll go to it as an industry. But we will have the luxury of experimenting with speech with our clients, because then we lose bargaining effectiveness.

And all I'm saying here is, if somebody's got this great idea to build something that's much more effective, uses less energy, and it doesn't defect or deflect the message, build the can and let us look at it.

COMMISSIONER ROSENFELD: I think we'll do that.

MR. CLAUS: And I think then the industry's not going to have any complaint, and it's dead. I thank you very much. We do have a written testimony gathered, which I'll get you to put online, and we do have a very extensive technical criticism of some of the things here, which we'll get you to put online.

Thank you. But it's not that we're hesitating cooperating. It's just that a mistake for us here is very, very serious. Thank you.

MR. FLAMM: Thank you. Mazi.

MR. SHIRAKH: May I ask a question, Jim. You may stay there if you wish. Why do we have to go to 14 inches on center if you go to T8s. Why can't we just keep it --

COMMISSIONER ROSENFELD: Mazi, I can't quite hear you.

MR. SHAPIRO: Speak into the mic, because amplifying.

MR. SHIRAKH: I was asking Jim, you know, he suggested if we used the T8 technology we should go to 14 inch on center, instead of 12 inch on center. And my question to Jim is why can't we

stay at 12 inch. The sign is, the intent of the, if we do things right, the sign should look the same to the motorist. It just inside of it, whatever change we make is going to be invisible to the motorist. It should look the same.

Now, what happens if we stay at 12 inches on center. We have the same illuminance, we still have energy savings. Why can't we --

MR. BENYA: We go up to seven watts a square foot instead of six --

MR. SHIRAKH: Why can't we do that?

MR. BENYA: -- versus 26.

MR. SHIRAKH: And the sign would have the same brightness?

MR. BENYA: The sign is, then it starts closing in. Now your brightness is probably down only about 14 percent. The, so, you know, and I think the point that's being made here is that we can, can we build a better box. It's my contention that yes, indeed, we can, relatively easily, with inexpensive off the shelf components that may, in fact, even reduce the cost of sign construction from the technology that's currently used.

I also believe that the issues of

readability and signing deficiency, I'm sure, given the amount of science you've cited here in your comments, there must be some technical papers that would relate that to vision science as we know it, would allow us to assess whether 14 percent as a significant impact upon the, on the signing efficiency, or deficiency, and readability. And I'd like to see those technical papers, because they would help us correlate that to the vision science that we used to set light levels for all other things.

MR. CLAUS: Not only do we accept that, I will see to it you get an invitation to a conference that is being set up April 2nd with Small Business Administration, and the Small Business Development Center of the universities, to discuss readability conviscuity with such people as the International Society of Illumination Engineers, Federal Highway Safety, and the people that are concerned in corporate identification. And we'll get you that.

We all have the same problem. Everybody's trying to make it, and for God's sakes, if you make this, why don't you copyright it. It's going to be worth a lot of money. And

I'm not saying that facetiously. I'm really not. But what I'm saying is we all have the same problem. We've all been tussling with this. But it's sort of the old story. When we started with these TMTs, there was a fellow named Stone, God rest his soul, who was a physicist at University of California, Berkeley. I know he's good, because that's where I went, only the best people go to Berkeley. After he --

COMMISSIONER ROSENFELD: And he was in my department.

MR. CLAUS: After he put the Santa Monica system together, and it didn't work, he committed suicide. And the reason was simple. His ideas got ahead of the technology. And all we're saying is, we're more than willing to share what we've got, but some of these things we don't think will work. Mr. Boren certainly tries to produce a cheaper product as, as he can, it increases sales. But he can suppress what he's doing if it cuts into the advertising effectiveness. And we'll share this and we'll try to get you as much, because we've been with the same problem. We've been on this readability and conviscuity study now for two years.

Thank you.

MR. SHIRAKH: Mr. Claus, just want you to realize that the lighting power densities that we're proposing only applies to internally illuminated panel signs. The channel signs, LEDs, neon, cold cathode, they do not have to comply. They don't have that requirement. In fact, I've been looking at a lot of signs lately, and I find the majority of signs are actually channel signs, rather than, when I go to shopping centers a good deal of them are channel signs, which would not fall under this lighting power density and would not, the only requirement for that is, again, the 60 lumen per watt source efficacy.

MR. CLAUS: Well, you're also bringing up another subject we're covering in what we give you, but the problem is just, what you've just done, how you've defined signs. Sign codes don't regulate signs the way you're talking about. There's a little different regulatory format. In other words, your definition of signs is a little bit narrow. And it's not what happens. What happens, it's true when you go to channel letters of any kind, you as a general rule go to neon because it's a more complementary kind of lighting

system. We try in some cases to go to LED, but we're having a lot of trouble with LEDs, both with the burning ratio and the light colors.

But the problem is that that's by no means the signs you're going to affect. And that's the other thing, we'll try to send to you some definition of signs where there's been litigation suggesting what you're doing is a little bit of a restrictive definition.

You see, the problem is you're overlaying sign codes, you're overlaying the METCB, and now you're bringing this zoning light density in, and you're just going to have a lot of conflict. And we understand that, because it's a complex area to regulate. And we've been, and I, you know, after all, I started off working for the city of San Diego Metromedia, and we might've won the case. But I've worked both sides of the street.

But this is far more complex than you think it is. And it's particularly in what you're defining as a sign. I mean, you've got a big division between outdoor, which, you know, can't under standard lighting. In fact, they're required to take a standard lighting. And be

immediate and not an accessory use. And be on premise. And we're going to try to get you those things, because as you progress along, you're right, pressing the envelope like this helps everyone. No one doubts that. It's just a problem that we try and we fail sometimes in some of these lightings that you're talking about.

So we'll be glad to get those. I thank you.

MR. FLAMM: Thank you.

I want to bring a time issue up. We've spent an hour now, on signs. I've got three more cards for folks from the sign industry, and I know there's more issues that are dear to folks besides the signs here, and I want to make sure we have time to address all of that.

So the first gentleman said eight minutes, and he was 15, and the second gentleman wa 20. So can I get one, the rest of you to speak just a couple of minutes each, if you'd like to make some comments, because we really would like to address all of the issues in the outdoor lighting standards.

So, Jim Cassie, do you want to go next?

MR. CASSIE: I'm not on signs, Gary.

Unless you want to consider billboards.

MR. FLAMM: Oh, you're on billboards. I'm sorry.

Okay. Mark Gastineau.

MR. GASTINEAU: Commissioners, staff, consultants, my name is Mark Gastineau. I'm with the California Sign Association, Sign Users of California.

First of all, I would like to say the California Sign Association has been working with staff to come up with a workable model that will work energy efficiencies and also make sure it does not affect the commercial message that we are doing. And we've came a long ways from the first meeting we've had. Staff's worked with us, they have been understanding of some of the issues. I got to draw on the table over there, they've got a little drawing board. Jim, you were on the phone, and we did that. We appreciate that. And we're very concerned, it's a very close subject to us.

We think we're going in the right direction. I think that depending on what side of the street you're sitting on, everybody wants to go, I have 16 to 20 watt per square foot, whereas you go to 26 watts, but I showed where your T8s

wouldn't work. But again, we need do this in a real world situation.

Staff has asked to visit a local sign company and walk through the manufacturing process, and we will set that up. And we're more than willing to open our doors and do this. But staff's came a long ways, like exempting neon, LED and gold cathode, the 16 lumens per watt. We believe we can do that, that it does fit. There's some real areas of backlit signs that we need to look at. And we'll look at that. But to say we haven't came anywhere in 50 years is a pretty short statement. We will take you to a shop and show you 15 different substrates that we use, different designs in interior lighting, what's out there.

Nobody came to us and regulated LED signage for on premise advertising. That means, because it came, the cost effect came down, displayed our message, it's energy efficient, maintenance-way it was cost effective to our customers. That's when that started to take the market over. So with that said, we're more than willing to keep on working with staff and we'll set up a meeting to go to some of our shops.

We have a big problem with these lighting zones, guys. I don't think anybody really realizes the effect. And if you have a McDonald's in Sacramento with freeway frontage, and you get 20, let's say 20 watts per square foot, or whatever we're going to get, and you go to Woodland and they're only going to get five watts per face, guess what. They're not going to be developing them. You can't take a petroleum company that's in Corning and say it's an L2 zone, and cut down their lighting in an area where they're going to have diesel trucks, they have showers for people, they're loading equipment, all those kind of things. You can't do that and be effective and be safe.

You know, we have ADA to worry about. We have health and safety to worry about. We have homeland security to worry about. And then, of course, we have the discrimination of business, where a business in one city to another city is going to be discriminated in the way they present their message to the traveling public. Those are scenarios we need to take into consideration. And it might be better to look at efficiencies and look at type of business to regulate lighting.

But I would like to commend staff. Thank you for all your efforts to work with us, and we're looking forward to working through this in the future. Thank you.

MR. FLAMM: Thank you, Mark.

COMMISSIONER PERNELL: One question. Mark, first of all, thank you for working with staff, and coming in and sitting down and having us better understand your industry.

So are you, when you talk about zones, are you saying that zones are not a good idea because it might change the, from one county to another, the illumination of the signs?

MR. GASTINEAU: Developing what zones would accommodate if you took, for instance, Corning, I think everybody can look at that, or if you go down -- Jeff, help. He must've stepped outside now. Some of these little areas are just, really there's no people there. There is no population. All they are is a home sitting out on a freeway. Five strip owners do that. Every about 50 miles, you have a population of businesses that support that whole corridor.

Under lighting zones, you are eliminating that or, in some instances, cutting

their lighting back by 75 percent, maybe 50 percent. We believe that's a large economic impact. When you look at freeway frontage property and the land taxes paid on that, because of their right to advertise to the mobile public, the economic impact to California, if we did not let them advertise to the mobile public or cut back the amount of advertising down, the development of business would slow down in those areas. People would be forced to try to come in the urban areas to develop so they could get their message to the mobile public. And we believe that's what would happen. And the economic impact would be devastated in California.

I think that's something we've really got to look at. To control lighting according to type of business is more, to us, more efficient than trying to do it on population densities, because it's not in all cases, when you get into rural areas, going to work in perhaps the way you think it might be working.

COMMISSIONER ROSENFELD: Could you expand on that a little? What you're saying sounds pretty interesting. That is, a census area in population is an area, rather than a line along

a freeway or a highway. And it sounds like you're not objecting so much to the zone idea as to redefining the zones so that highways and freeways get some sort of exemption.

MR. GASTINEAU: That's not --

MS. SHAPIRO: Or development on the --

COMMISSIONER ROSENFELD: Yeah.

MS. SHAPIRO: -- side of a highway or freeway, a linear --

COMMISSIONER ROSENFELD: Yeah, linear, rather than area.

MS. SHAPIRO: Right.

MR. GASTINEAU: That could be true. That could be linear in -- I, you heard earlier, we don't know how you're going to regulate this. This lighting is on overlay, this overlay of zoning a step above any county or city right now that does that. So you're looking at a state plan to overlay zoning in the whole state of California. And zoning, even though you're only trying to regulate lighting in one aspect it's going to regulate use of that property. You're regulating use.

And so it's going to be very difficult to do that. There's a way of doing that, and I'm

talking about if we have commercial frontages, freeway frontages, gas station, hotel, motel. The businesses that need the mobile public to come in and do that, fast food, you can regulate. That way, if it goes out of this mix, you can possibly come up with a lighting zoning that could work on the other types of lighting. But I think to take all businesses and try to pull them into a zone, lighting zone, is going to be an economic disaster.

COMMISSIONER ROSENFELD: Okay. That's an interesting point. We'll have to talk about that.

MR. GASTINEAU: Thank you. Any other questions?

MR. FLAMM: Thank you, Mark.

MR. SHIRAKH: Just, you know, I've been looking at a lot of signs lately.

COMMISSIONER ROSENFELD: Into the mic, Mazi.

MR. SHIRAKH: I've been looking at a lot of signs lately, like Burger King's, for instance. Most of these establishments are using channel letter signs, where like the sign is the shape, and again, those things are outside of our LPDs,

you know, whether it's lighting zone 1, 2, 3, 4, it doesn't matter.

Fortunately, channel letter signs are a more efficient way of delivering the same message. So, you know, it's very important to realize that we're not regulating that part of the sign industry at all. It's only the big panel signs that would be impacted by the LPDs.

MS. SHAPIRO: But still, Mark has made a pretty interesting point.

MR. SHIRAKH: I understand. And I just was into rebuttal what he was saying. I think it's important for everyone to understand that, what we are regulating and what we're not.

MR. GASTINEAU: If I could make a point about, and I'm not an attorney, I don't want to state law. But now we're not regulating power usage, we're regulating kind of sign. That's a whole different thing. Yes, some logos can be done in individual letters and those kind of things. We have applications for building signs, and those applications, state parks, if you have a hotel, yes, you can do illuminated letters, and do that. But the same company, like the Flying J or whatever, now has to illuminate because they're in

Corning. They have to change their registered trademark to an individual letter, it can, to be able to work within the Energy Commission's requirements of lighting, now you're regulating by type, not light. And I believe that would step outside of SBX.

I, you know, I'm not disagreeing with you, not that letters are more lighting efficient. It's because if we use efficacy towards all signs, instead of just neon letter signs, you might get to a different place. But you can't, I believe it's, you have a very big difficulty regulating by type of sign. That's regulating speech. And again, I'm not an attorney.

MR. FLAMM: Jim Benya.

COMMISSIONER PERNELL: I thought I heard you say you would prefer regulating by type of business than by zones.

MR. GASTINEAU: Let me explain what I'm talking about. Of course, if you have, it depends on the type of business. If you have a manufacturing facility and you impacted them in a way through a lighting zone that created different lighting standards for them, they're not trying to pull people off the freeway. Their livelihood is

not, their taxes and receipts are not determined by the mobile public and who's coming into their facility. That's a different type of use.

If you take highway commercial, hotel, motel, gas stations, fast food, all these are, these livelihoods are balanced on the mobile public. They're balanced on getting their revenues and creating jobs through the mobile public, and servicing those people along the freeway corridor or highway corridor.

So that's where I'm trying to go, Robert.

COMMISSIONER PERNELL: Right. I understand that point. I was --

MR. GASTINEAU: It's a fine line. It's, I mean, it's tossing it up in the air. It's new to us, too, and we're looking at it, going, we're looking at the possible problems and the economic impact of this to business, and the safety areas, and then looking at these areas up five that are mostly down five, these areas are nothing but highway commercial. They're nothing but a group of businesses that are there to serve the mobile public. There isn't real northern population there. So how are you going to regulate that?

Are you going to put them in a L2 zone, or, I guess that's where they'd be, LD2, and you're going to cut them by 50 percent of their light? That's an economic impact. And it's a safety issue.

MR. FLAMM: Jim, do you want to respond to that?

MR. BENYA: Well, just, just a couple comments. Actually, in the process of going through our work, we took a lot of this into account, and so has the IESNA, that's setting its standards. The reason for the different lighting zone is, let's say, and I think the I-5 corridor is an excellent example that you brought up of the issues that face us. Along the interstate, in the middle of nowhere, if a service station is illuminated to 25 foot candles with, in contrast to a scene that has probably an average, at best, of .1 foot candle, and that's high for that situation, the contrast between the service station and the environment is probably greater than 250 to one, in terms of just illuminance.

What happens when I then approach a major city, and I have a number of service stations and competing businesses along the

freeway is the average scene illumination goes up to maybe 1 foot candle. And then we do allow the increase of the, well, we could go from a lighting zone 2 to lighting zone 3, and now allow the doubling of the light level in lighting zone 3. And actually, the contrast between the service station at 50 foot candles and a surrounding illuminance of 1 foot candle is actually less than 25 foot candles in the middle of nowhere.

All of that is taken into account in developing these lighting zones. One of the things that would happen, for example, is along the freeway, the ability of communities to make adjustments in the lighting zones. They could, number one, declare along the freeway a lighting zone 3, and then if the community so desired, increase their, that particular zone to lighting zone 4. Those sorts of things might be able to happen, where at least lighting zone 3 could be cheaper truly anywhere, including the middle of nowhere.

So I would, I would suggest that the flexibility for the community to set its own standards for what it thinks is enough, in terms of the safety and security in just illumination,

is actually built into the lighting zones, and it provides a very useful tool for us to have situations where the community wants it to be a little bit quieter and less bright, they can choose that just as much as it can choose it to be more bright.

The way it relates to signs, by the way, Mark, is that, as we were talking about last week, I think you've made a very strong point about how important uniformity is in carrying out the message of the sign. I think that really struck home, and one of the things we're working on now is to try and see if we can find a common ground where we can reduce the power of that sign, possibly reduce its brightness a little bit, maybe not, but maintain the uniformity and so you can read the sign well.

I think we have every intent upon taking into consideration the readability issues that were just raised, and making sure that we maintain equal readability. But once again, if you're in the middle of nowhere, and there's no competing light source, a sign is significantly more visible than if it is equally illuminated amongst many signs. And so we feel that there's a very

reasonable ability to reduce the brightness of the sign in the middle of nowhere, where it has no competition, because the readability of it, not having to sort it out amongst competing signs, would roughly be equal.

Now, we're trying to take all of this from published materials that are available to guide us. If you're aware of something that would help us do a better job, we're open.

MR. GASTINEAU: Yes, and I understand what we're trying to accomplish, and that's why we're all working together. We need to show you some real world applications. But to say effective some sign in downtown Sacramento, the most effective, that sign does not need to be that effective when you go to Corning because there's not even much ambient light, and that's really what you're saying, I say that's a misnomer. You're still doing 65 miles an hour along the freeway, you still have setbacks, you still have the speed of traffic, and you still have elderly people trying to make off ramps. And the federal highway department doesn't change their signs when they get to Corning and downtown Sacramento. There's a reason for that.

So I think it's fundamentally flawed in real world application, and I think we need to be working on that together. And we just come from different sides of the street, but somewhere we'll get a path and we'll come together on it. But I, I think you cannot say, well, if 100 percent's okay, then 75 percent's going to be okay over here. I don't think that's a good way of looking at it.

Gary, Mazi, thank you very much.

MR. FLAMM: You're welcome.

COMMISSIONER PERNELL: Thank you.

MR. FLAMM: Jeff Aran.

MR. ARAN: Thank you. My name is Jeff Aran. I'm with the California Sign Association, and I'll be really brief, at least a lot briefer.

I just wanted to reiterate the points that were made by Mark earlier. I agree with all those, and he kind of took the thunder out of what I was going to say, and proving that great minds think alike. Commissioner Rosenfeld's question is clearly what I was going to focus on.

I just would like to make these further observations. The lighting needs for signage that are existing out there do not allow for a one size

fits all kind of thinking. Population based standards do not determine visual acuity. I heard Mr. Benya earlier, not today, but previously, to the concept of visual adaptivity, and he's unfolded it here again when he's talking about you don't need that much light.

That, to me, has nothing to do with energy conservation. What that has to do with is this idea of luminance. And if you can show that the luminance factor will still be there, you won't have this situation where you'd be creating a competitive disadvantage among businesses, I think you will be able to achieve something. But so far, everything we've seen suggests just the opposite. And this concept of a competitive disadvantage is what we're extremely concerned about.

Using the example of Highway 5, you know, you drive down Highway 5, you pass Kettleman City or Buttonwillow, any one of those places, the new business that comes along is going to be subject to the new standards. How are they going to be able to compete if their inability to communicate their luminance is going to be diminished as a result of these standards.

And I also think that the overall energy conservation benefit will not be achieved by virtue of creating these zones. They, in fact, this whole concept of zones, once again, I think is contrary to the concept of the legislative intent of SB 5X.

And so I told you I'd be brief, and I'll leave it at that, just to put it on the record. Thank you.

MR. FLAMM: Thank you, Jeff.

Okay. Any additional comments on signs? Good. Thank you. I'm glad we, everybody got a chance to speak.

Oh, yeah. Jim Cassie.

COMMISSIONER PERNELL: He's on billboards.

MS. SHAPIRO: New topic, but close.

MR. PENNINGTON: Those are signs, from our definition.

MR. CASSIE: Commissioner Pernell, Commissioner Rosenfeld, Ms. Shapiro, been a long time. I was listening to the Signtronix president talking about small businesses. And I remember Governor Wilson used to talk about the best way to get a small business in California is start off

with a big one.

(Laughter.)

MR. CASSIE: Anyway, and that's a lot about what the people that I represent, which are the California State Outdoor Advertising Association. There's the clear channels, the Viacoms, Viacom owns CBS, and there's also the advertising in Chico, and the general advertising in Ontario. And our concern is really that when these regs go into effect, that they can go get their building permit with the technology that's there.

And I want to also commend Gary and Mazi, they went out one night and looked at all the applications, and let me just tell you, these guys are into this more than -- it's almost scary. But they're into this.

So the minor differences that we do have, we think we can work out, provide some more data and hammer out something that'll work. That's really what I got to say. Thanks.

MR. FLAMM: Thank you, Jim.

COMMISSIONER PERNELL: We appreciate that, Jim. And Mark, and everyone else that's working with staff. I mean, one of the reasons

we're having this is so that we can hear from you, and, you know, you guys have heard me make this speech before, but it's important that we create a level playing field that we enhance the efficiency of the signs. I think that's what we're trying to do. We're not trying to cause any accidents or, I mean, I wear glasses and I can't see from here to the wall over there, so I'm going to need a lot of light when I'm looking at a, at least a freeway exit.

But the point is that we need to hear from you. We need to know how it affects the industry, and we may or may not agree. Commissioner Rosenfeld and I would encourage collaboration and some type of agreement, because you certainly don't want us up here, or certainly don't want me up here making those decisions for you. So to the, to the point where we can work together, even if it's a field trip or if it's viewing a factory, or whatever we got to do to understand, I think we're willing to do that. I mean, I think staff and the consultants are willing to make those trips, and put in that time for more understanding.

However, we would also ask that you be

conscious of what we're trying to do, and that is to be more efficient with the state's energy. And with whomever energy who buys it, but overall, we want to try and lower the baseline of the state. And it's not just with signs, it's with efficiency in homes, it's with everything across the board.

But we can't achieve that goal without your input, and your, you know, disagreements and collaboration, and whatever else that goes into this. But at the end of the day, the goal is to come out with a better product for everyone, and not to disadvantage in the small business or any other business. Or any community.

So I didn't have a card to sign up to speak, but --

(Laughter.)

COMMISSIONER ROSENFELD: That's all right, it wasn't very long.

MR. FLAMM: You have a get out of jail card you can use anytime.

(Laughter.)

MR. FLAMM: Okay. Cheryl English, are you online?

MS. ENGLISH: I am here.

MR. FLAMM: Would you like the floor?

MS. ENGLISH: Sure, why not. You're giving me a tough group to follow, though.

MR. FLAMM: Well, we don't, no one else has filled out cards, so I have no other subgroups that everybody's fallen into, so we're kind of at a potpourri right now, I believe.

MS. ENGLISH: All right.

MS. SHAPIRO: Can we turn up Cheryl's voice at all? Can we make her -- Cheryl, hang on for a minute. We're going to try to get your volume up.

(Inaudible asides.)

MS. ENGLISH: I'm going to, I just picked up the handset. Is that better?

MS. SHAPIRO: Yeah, that's a little better. I think we're at the max, but we can figure out how to do it for you.

MS. ENGLISH: Okay.

COMMISSIONER ROSENFELD: Yeah, that's pretty good.

MS. SHAPIRO: Okay, you can talk now.

MS. ENGLISH: Well, in the absence of time, I had submitted a six-page document with regards to comments on the outdoor lighting measures, both measures. And I'm not going to go

through all of those details, I know the document will become part of the record, and I'm basically going to comment on those things that I've heard here today.

It's a little bit difficult since I did not have a copy of Jim's slides to follow through all the details on the light levels versus power density. But I guess my biggest concern is --

MS. SHAPIRO: Cheryl, I want to interrupt you for a minute, because his slides just duplicated what was in the draft standards, so if you turn to page 81, you've got exactly what his slides showed.

MS. ENGLISH: Okay.

MR. BENYA: That's actually, Rosella, it's not exactly correct.

MS. SHAPIRO: Oh.

MS. ENGLISH: I thought that Jim had mentioned some foot candle levels that correspond to the different zones.

MS. SHAPIRO: That's true.

MR. BENYA: Yeah, that's correct, Cheryl. The values were the same. In fact, these values on page 81 are better.

MR. FLAMM: I want to bring up, Cheryl,

I believe that our staff, one of our student staff, sent that document to you. At least they went upstairs to do so at 1:30.

MS. ENGLISH: What I received was the residential and nonresidential slides. I did not receive anything for outdoor lighting.

MR. BENYA: You might want to double check your e-mail.

MS. ENGLISH: I'm sitting right here.

MR. BENYA: Okay.

MR. SHIRAKH: Well, we have, we had him follow on sending out e-mails today from the Commission.

MS. ENGLISH: Yeah. I did get a previous e-mail. It really isn't important to the facets of the workshop here, however.

COMMISSIONER PERNELL: Why don't we let Cheryl make her presentation, or comments.

MS. ENGLISH: I do appreciate the fact that the contractors have gone back to review the malls, because I think that's been an area of great expansion. What I've heard today still does not make me feel any more comfortable that the models are valid. I appreciate, Jim, the fact that you kind of equated those to different light

levels, because I think that's the biggest concern a lot of retailers face, is are they going to be faced with significant lighting reduction.

However, a lot of the assumptions of those models are very critical. We've asked for the details of those models on a number of occasions, and we've yet to receive any details that are meaningful to help us understand this.

For instance, the parking lot measures did not take into account straight from where the poles can be placed, which is the -- in the middle of a driving lane. The light level analysis area within the middle of a parking lot, and the IES recommendations are based on the site. There's some differences in terms of the areas evaluated in the models, versus the areas related to the lighting power density calculations.

So, again, I'm thrilled to see that there's more models, and more substantiation for those lighting power density numbers, but we really need to see the data on which this was all based.

I'm clear on the trade-offs and the use it or lose it criteria. I have not yet found in this document exactly where all of that is

treated. And so perhaps someone, staff or something, can help me understand what is appropriate for trade-offs, what's appropriate for use it or lose it, because I, with the changes in the document for this November draft, I'm having difficulty finding a lot of things that used to be there.

I am concerned with the fact that there's new scoping added. At this point I'm, I think given the fact of where we're at in terms of the development of this, it is really not appropriate at this point in time to add to the scope of what we're trying to cover in outdoor lighting.

I do appreciate the fact that the Commission is taking consideration of a lot of the comments provided in the past, and has scaled back some of the scope and providing specific exemptions. The cut-off criteria being scaled back to a more reasonable set of applications is very appropriate. We, NEMA had submitted comments with regard to the exception of those units, with our endorsement of the cut-off, that included items such as basic insecurity, and esthetics, and other performance criteria, and we never received

comments after the discussion, and I would like to have consideration of those exceptions added to the standards.

I again would like to reiterate the fact that I think the Commission is taking on a very large focus for this brand-new standard, and I would like to reiterate that I think it needs to be scaled back. They do need to recognize the exemptions. They need to provide the lighting industry with the models, and we have also asked on a number of occasions for the cost effectiveness of these measures and have not received that information, and we really would like copies of different analyses.

That's the bulk of my comments. Thank you.

COMMISSIONER PERNELL: Thank you.

MR. FLAMM: Thank you. Could we get the microphone turned down a little bit? We have some feedback here now.

Okay. Jim, would you like to make comments?

MR. BENYA: Okay. Hi, Cheryl, it's Jim Benya.

MR. ENGLISH: Hello, Jim.

MR. BENYA: I've got a few answers for you to get us started, although you've raised an awful lot of questions, so it may take some time to get to all of them. But today I can answer a few for you.

First of all, as far as the trade-off versus non-trade-off, in other words, versus the use it or lose it, the way we deal with use it or lose it, if you turn to page 79, sub D, calculation of a well lighting power, two under that, for each application listed in Table 133-C, determining illuminated area, multiply the illuminated area by the allowed lighting power density, the total allowed lighting power for that application is the smaller of the product of the actual lighting, of this product or the actual lighting power used for the application.

That is the language we've, we use in the standard to make it use it or lose it. In other words, if you don't, if you don't use the power, you don't get it. Whereas in the other one, the one previous, .1, where you add up all the allowed powers for the site, that is where, that is how trade-offs are permitted.

MS. SHAPIRO: So, Jim, is that basically

Table B versus Table C? Table B is tradeable, and Table C is use it or lose it?

MR. BENYA: Yes, that's --

MS. SHAPIRO: That's what is said in your slides. Yes.

MR. BENYA: That's the net effect. That is the net effect. Table B items are added up --

MS. SHAPIRO: Right.

MR. BENYA: -- and Table C items, you use the smaller of what you're allowed, or the actual power used to do that thing becomes use it or lose it. That's correct.

The second, the second thing you asked --

(Parties speaking simultaneously.)

MR. BENYA: Sorry, Cheryl. Speak up.

MS. ENGLISH: This is a new concept introduced in this November modeling, because I don't remember seeing this in any previous models.

MR. BENYA: This is not the model. This is the actual draft standard. You may not have seen it before.

MS. ENGLISH: I don't remember seeing this presented in the June draft, which is the last draft I've seen from the Commission on the

proposed standard that included this tradeable versus total power allowed in any previous --

MR. BENYA: Well --

MR. ELEY: Well, there was no, there was no draft standard in June. That was a research report. And that research report did identify areas that were tradeable and ones that were, we expected to be use it or lose it.

MS. ENGLISH: I remember use it or lose it, but I don't remember the tradeable. I'll just have to study this.

MR. BENYA: Yeah. There is no question, Cheryl, that there have been many, many adjustments from the research report into writing the draft language. As several people pointed out here today, trying to write new standards, new materials, and do it so that we don't have unintended consequences, is hard. And I found this particularly when I looked at the landscape and hardscape and walkway type lighting. That's where I, after I did a lot of work, I realized that this had to be written a little bit differently. So even the research report didn't get everything perfect the first time.

I'd like to segue into your other

question, how things are laid out. When I redid, redid several of the existing models rather substantially in order to convince myself that the numbers of my other team members were correct. And the types of layouts, and I'll be glad to put these in a form and share them with you as we do a wrap up on this effort, I tried to take realistic parking lot, walkway and other layouts, things that I actually am designing today, things I'm actually doing today, and use those as models. I was not trying to push the envelope. In fact, I was using as ordinary of modern lighting equipment as I could so that I wasn't trying to, let's say, force the use of high efficiency equipment.

And I was extremely satisfied that these numbers stood up against those tests. Part of the reason why is because when, in the case of parking lots, for example, when Clanton's office did the initial work, although the layouts were somewhat, perhaps maybe even unusual, the points where the measurements were taken, et cetera, when I loaded these back in and did point by point analyses I found that, if anything, the systems performed very, very well, with excellent uniformities. And regardless of where you were in the parking lot,

the criteria were met.

So it was, you know, I was satisfied that those numbers were particularly good. Where they weren't, well, I gave them a little, I kept running it until I came up with a number that I did feel was good.

MS. ENGLISH: And, Jim, was your analysis area the entire site, or was it only areas internal to the site?

MR. BENYA: Okay. When I did a parking lot I did the parking lot and a ten-foot band around the parking lot.

MS. ENGLISH: Of the entire site of the parking lot.

MR. BENYA: Entire parking lot, with the densest grid that the computer would stand.

MS. ENGLISH: Okay. Then we'll certainly look forward to being able to review your assumptions and reviewing the results of that.

MR. FLAMM: Mazi, you have comments?

MR. SHIRAKH: Hi, Cheryl, this is Mazi. Related to the cut-off exceptions that you talked about. It's a little bit difficult to hear you. I did look at the three papers that NEMA provided

us, and I think in my mind I've incorporated all the exceptions that was mentioned in them. I think you mentioned some of them were left out. I think you and I need to go through the list and make sure that nothing is left out.

MS. ENGLISH: Yeah. And I've stated in my letter the exceptions should include the following safety and security concerns, areas that require special esthetic needs or vertical illuminance criteria that cannot be met with --

MR. SHIRAKH: Okay. So you're not talking about the cut-off requirement. You're talking about the illuminance levels, then.

MS. ENGLISH: No. I'm talking about the cut-off requirements should be excepted when there are applications that have those compelling needs. When it cannot be met with cut-off optics.

MR. PENNINGTON: This is Bill Pennington. It seems like it's going to be quite difficult to write language as general as what you just said. You know, you'd like cut-off to be excepted whenever there's this kind of a problem. And we need to figure out some way to define those spaces where those problems are likely. So I think there's some work here to do to add to the

list that Mazi's already put in there, and to cover your concerns without --

MS. ENGLISH: I agree that my words are very general and hard to enforce, so we'll be glad to work with you to come up with some right wording.

MR. PENNINGTON: Okay.

MR. FLAMM: Anymore comments related to Cheryl English's comments?

Okay. I don't have anymore speaker interest cards. However, Mr. Gray, you submitted a paper. Would you like to speak?

MR. GRAY: I'm Ed Gray, I'm with the National Electrical Manufacturers Association. And as you know, we've made numerous comments on this and other California proceedings. I think there are some copies handed out that Gary has there.

If you go to the second page. These re more general, and I won't take as much time, maybe, as the signage folks, but these are still valuable, general comments.

The first one is along the lines that California has had an extremely fast moving target here that we've tried to, manufacturers have been

trying to keep up with, understand, and so on. And some of the divisions from our previous activities now we're trying to comply with, and we're finding lots of difficulties. One of the areas that we would ask you to be mindful of for the future is labeling requirements.

One of the things about Title 24 that's, on the lighting area, that's kind of interesting is it's kind of a combination in some areas of product requirements, but mostly it's product application requirements. And I think to the extent it's a product application requirement, that's less of a problem from a manufacturing perspective. When it becomes more of a product requirement, and later on here I have, you know, an example of what shows up on a astronomical timeclock, it, you know, what's read off of there and what isn't, that becomes perhaps more of a product requirement, and that sort of thing typically causes more of a difficulty for us.

But anyway, what I think would help the, in the context of Title 24 2005 revisions, is if we have a clear timetable laid out at a fairly early date as to what the implementation schedule is. I know we're trying to get, you know, the

requirements done by like July 1st, 2003, but if we can better understand the implementation schedule I think a lot of those comments that were perhaps talked about, about other products, really had to do with that. I mean, what we have now versus what we can do --

MR. PENNINGTON: We've gone over that several times in the last year, to talk about the implementation schedule.

MR. GRAY: Okay. Well, if we could, you know, like have an example I can, you know, promulgate to the membership of NEMA so they understand, you know, what this really is out there, I think that would be useful.

One of the problems we have on everything we do in business is communications, and if we could, you know, get that out there to the folks I think it would be useful.

One of the areas that's a little closer to what's in the proposed standard is a lot of changes in fundamental definitions we see, and one of the things we'd ask is if is the definition of a term that appears in a number of other standards that we, to the extent possible, kind of stay with those standard definitions, because they could

appear on any number of codes and standards and they mean certain things to certain people worldwide, and the manufacturing business for all of these products is a worldwide activity, so we'd appreciate that.

If you want to make a requirement that, take that standard definition and flesh that out some in the way of a requirement, you know, and the world standards requirements, that'll be requirements and definitions ought to be definitions. And some of you who work with international standards understand why that's an essential thing.

MR. PENNINGTON: We try very much to do what you just described. So it'd be very useful to get any specific comments.

MR. GRAY: Yeah. The one example that comes to my mind in this, there's like several things embodied in this one definition, is the automatic controls under skylights. That's a very complex definition, and it has many, many features in there. And if we could somehow pare down a definition that's fairly short as to what the intent is, and then maybe the requirement talks about, you know, gee, what is there, eight or ten

different pieces of that definition that are in there now.

MR. PENNINGTON: I agree with you. I agree with you very much, and we've been working on exactly that item. So if you have any specific suggestions on that, we'd appreciate it. But you're right, in previous versions of the standard, criteria had kind of drifted into the definition --

MR. GRAY: Right.

MR. PENNINGTON: -- related to skylights, and we're trying to rectify that.

MR. GRAY: Okay. Thank you.

MR. SHIRAKH: Have you talked to John McHugh about this?

MR. GRAY: Yeah. One of the difficulties we had with that particular area, you know, I think in the lighting controls area we've worked a lot with your staff and your consultants, including John. One of the difficulties we had in that particular requirement is when we submitted our written comments, I was looking at three different things at the same time. You know, we had a previous version. We had John's proposed changes, many of which were our idea. Then the

November 5th version came out at about -- in fact, it was, came out when I was on the line with the NEMA members going through the comments, so I tried to put those, you know, in the comments we sent prior to the meeting two weeks ago. And now we've got, you know, another edition out now.

So one of the things I tried to do in those comments now is say, you know, let's, at some point we need to sort of get this right -- change reduced so we can all understand what's in there, and we can make sort of final comments and wrap it up, and that kind of thing. And maybe this, in this part of the process that's normal, where we have this sort of situation sometimes.

I had a specific example. We made that comment about the dimming, continuous dimming versus stepping controls.

The other thing here, and Cheryl and others have talked about this, is if there's some figure of merit that we're trying to establish, you know, we'd appreciate knowing that. We have this time dependent economic evaluation which looks, I think it's sort of a time of use evaluation typically of electrical energy value. And, you know, so for those things that are saving

a lot of energy that is translated into dollars for that definition, that should have bigger clout, and those things should be higher priority, perhaps, to deal with.

So this was similar to Cheryl's comment on, you know, sort of a cost effectiveness measure of some kind on these changes. And I gave the example here of, you know, the DOE, when they have an energy efficiency standard they're proposing has to have one quad saving in the product over its lifetime throughout the country. So, you know, you can agree or disagree with how they arrive at that number, at a calculation. At least there is some criteria out there that they're nominally using for decision making.

And then a comment which others have also made. If there's some additional matters, such as safety or security, or something, and some of these outdoor lighting standards would need to be mindful of those and make sure that we're not making, creating a dangerous situation, or whatever, just by having energy savings. Not that energy savings aren't important, but it's not the only consideration, you know, in product design matters.

So those are the basic comments. I think particularly in the lighting controls, I thought, you know, there was a lot of progress made together, and maybe we're just to the point where so much is happening so quick, you know, that we have a hard time getting to the end point. But, so I think if we had, you know, a schedule laid out for the implementation, we could feel a lot better. A lot of our experience right now, as you might imagine, is based upon the rocks that are falling on our heads with various California product standards, and so there's a lot of attention focused on this kind of stuff right now.

Mazi, do you have a question?

MR. SHIRAKH: One comment on security lighting.

MR. GRAY: Sure.

MR. SHIRAKH: That's precisely why we've added Table 133-D, on page 82.

MR. GRAY: Okay.

MR. SHIRAKH: It was partly on comments made by NEMA representative.

MR. GRAY: Good.

MR. SHIRAKH: For parking lot lighting.

MR. PENNINGTON: I'd be glad to explain

the implementation schedule to you.

MR. GRAY: Fine, okay. One of the things that would be good is we get, you know, a lot of the NEMA members like to get information through us, because we have all these, of course, membership lists, and so forth, where we can promulgate a lot of information. So if there's some general, you know, laid out schedule there for the future, we can certainly get that out to folks, and hopefully people might be a little less anxious if they saw that.

MS. SHAPIRO: You can look on our Website. It's pretty clear on the Website, that's where I refer whenever I'm, you know, worrying about what exactly is going to happen when.

MR. GRAY: Yeah, okay. I'll, I basically get on the CEC Website every day when I get to the office, and a lot of times, you know, I catch the brand-new thing that showed up the night before, and sometimes I don't. But our members frequently haven't, you know, and so, yeah, that's really a good Website. It's better than a lot of them that are out there. But at the same time, I think when something really significant happens, there needs to be some promulgation of the change,

you know, as opposed to it's up to manufacturers to get on there, you know, daily, that sort of thing.

COMMISSIONER PERNELL: I think that Bill can, Mr. Pennington can get to talk to you about the schedules.

MR. GRAY: Yeah, thank you. I appreciate that.

COMMISSIONER PERNELL: That'll be fine.

MR. FLAMM: I would also encourage your members to sign up for the, what did we call that, the --

MS. SHAPIRO: List server.

MR. FLAMM: List server. If they sign up for the list server, they will be electronically notified when anything new is put on the Web.

Jim.

MR. BENYA: I would also like to offer that, you know, the consulting team can often very quickly answer a question, such as Cheryl was raising today, for example. I know many of your members are concerned about specific issues.

MR. GRAY: Right.

MR. BENYA: For example, your comments

just now about safety and security could very easily have been answered by us stating we use IESNA standards, current IESNA standards, including RP2, which, if you know anything about the retail, outdoor retail and car sales areas, is pretty controversial. It differs from the N book, for example. And we have taken the most, I want to say conservative position which is, in other words, the one that would probably most represent your members' concerns. All that could be answered in a few minutes, and feel free to call me or any of the other members of the team, as well as, of course, staff, and we can give you some very quick answers to those.

And I'm just concerned that sometimes it's just a matter of, someone has a technical question, they aren't able to find it in the Website materials, they aren't able to read it in the reports, for whatever reason, and a five minute question would clear it up. And I think there has been a huge amount of research and consideration of these issues in here. The team is very skilled at lighting and lighting related matters. You've got professional engineers, you've got fellows of the IES and other members

working on this. You should be able to get the answers that you need by asking us.

MR. GRAY: All right. We'll do that.

MR. FLAMM: Okay. Anything else?

MR. GRAY: I don't believe so. Thank you.

MR. FLAMM: All right. Thank you.

Bruce.

MR. MAEDA: Bruce Maeda, Energy Commission staff, but I'm also representing myself in this particular instance. My training and background is in astronomy and astrophysics and relativistic cosmology. And my concern is regarding light pollution and access to dark sky. I'm probably going out tonight, and I have to drive 40 miles out to get enough, to get an adequate dark sky to see the Leonids tonight.

But I am concerned, in particular because I believe that light pollution is a waste of energy and light. And in particular, there's no reason to light up the night sky. I've often traveled flying through the United States, across the United States, and look at a lot of street lights, and some of them are cut off luminaires and they do light up the street, and don't light

up the night sky. But some of them, you see the lamps, many, many lamps, and there's no reason for it. You're lighting up something. You're trying to light up the airplane, and it doesn't need that light. It needs that light on the ground. And so I strongly encourage you to include cut-off luminaires in the light.

I am concerned also about the recent trends over the last decade in athletic field lighting, which seems to me to have jumped in leaps and bounds in terms of the amount of light they use in athletic fields. I know that UC Davis has an athletic field that I can see from 20 miles away, and this is truly amazing to me, but, and the standards I think have gone up on athletic fields considerably, and I see no particular reason for it.

But anyway, I am concerned that, like I say, light pollution, light trespass is wasted light, and wasted energy.

MR. FLAMM: Okay. Thank you, Bruce. Mazi, you'd like to reply to that?

MR. SHIRAKH: I just want to briefly mention that our mandate from SB 5X is to save energy. So, you know, we can't look at measures

that are specifically designed to limit light pollution, for instance. So it has to save energy and be able to pay back for itself through energy savings.

MR. FLAMM: Jim.

MR. BENYA: I might also add that the most efficient way, often, to illuminate an outdoor area is with cut-off light. And you're absolutely right, Bruce, when the light goes up in the air, it doesn't do any good. It's just wasted energy. The models that we constructed use forms of cut-off lighting almost universally because of that. So it is going to be very difficult for a designer to achieve appropriate light levels within the power budgets that are being provided, without using cut-off lighting.

They'll have to choose between having non-cut-off lighting and creating light pollution, or lighting the area correctly and using cut-off lighting. It's not, it's not fixed, it's not absolute. There are some, there is some flexibility in there, but not a lot. If you have an acorn globe lamp, for example, which, although is lovely by day, is a glare bomb and a light polluter by night, you cannot create parking lot

lighting levels and other lighting levels that are appropriate because you are throwing half the light up into the air, and you just won't get there. So the designer will have to choose between not lighting things correctly, as I said before, or lighting them correctly and probably having to use cut-off lighting.

To Mazi's point, our directions were very clear. We could not go beyond energy efficiency, and so for that reason there is no, there's no real explicit attempt to regulate that here. Although implicitly, it will be difficult not to more or less do dark sky friendly lighting.

MR. FLAMM: Okay. Leslie.

MS. DAVIS: Good afternoon. My name is Leslie Davis, I'm a lighting consultant with Auerbach and Glasow Lighting Consultants. And I have a question specifically to Jim. If you could explain further the rationale behind hardscape plaza, or maybe there's, I believe that you were the one that was discussing this.

If I take an application that I'm working on presently, I want to understand how I would use the outdoor Title 24 codes. Because I have an urban environment where I have a hardscape

plaza, as I would understand it, between the building grounds, the sidewalk, and the entry to the building. So if I take your foot candle levels, which I was trying to write as you were giving those today, I would be going from the building grounds at two and a half foot candles to my hardscape plaza at 1.5 foot candles, to my building entrance at 10 foot candles. Or would I be able to consider part of that hardscape plaza as the building grounds, if I went from the sidewalk to the entryway?

Specifically, I'm addressing this because with the previous allowances it seemed that we were able to do hardscape plazas within urban environments. If we have hardscape plazas without landscaping, so we don't get those additional lamps for the use it or lose it in the landscaping, then I think we may have some issues that need to be addressed, or a different definition of hardscape plaza.

Thank you.

MR. BENYA: That's a good question, because this is an area that I had to do an awful lot of work on to make it work. The intent, explain what building grounds, we don't -- the way

this whole thing works, Leslie, is you lay the site plan out, okay. And just the way you would do any other type of planning, you're going to say okay, this area is this type, this area is this type, it's as if you're creating rooms.

The intent of building grounds is to say if I want to call something building grounds, building grounds is the area created along the total site driveway, walkway, bikeway, or trail, and it's 25 feet in width. So you get so many watts per lineal foot along their 25 foot width. Twenty-five feet happened to be picked, by the way, because it more or less corresponds to two lanes of traffic going each way.

So that 25 foot width, and you can choose to put that 25 feet anywhere you want to, with respect to that path. So you can shift it over to the left, shift it over to the right, shift it up and down. So it's, the path is going to run along, and you can shift it to one side or the other. And the immediately adjacent area, you can call something else, such as a building entrance, a parking lot, et cetera.

Okay. In addition, and we're not talking about landscape lighting yet. So you lay

your whole site out that way. You measure the areas, you add up the watts, that's how many watts you get to do your site. Because these are trade-offable powers, for the most, this particular group, that's the total power power allowance you're allowed, and then you do your lighting design, and as long as you're under, you're fine.

Okay. So it does work if you lay out a site in that way. That's the way to approach it. You have a choice of what you can call things, to a certain extent. The way the foot candle levels work out is intended that you build an illuminance as you approach the building. As we all know, that's good design practice.

So I think it works that way. If you try it that way and you find --

MS. DAVIS: So you're saying I would be able to trade off by taking some of the wattage allowance within the building grounds category, and apply that to my plaza.

MR. BENYA: Exactly.

MS. DAVIS: Okay. Why don't we make sure that the hardscape plaza has enough watts to do a proper lighting job for the hardscape plaza?

MR. BENYA: That's a good point. That's

a very good point, because hardscape plazas could be anything from a natural area to an elaborate fountain or something else.

MS. DAVIS: Correct. And then --

MR. BENYA: If we --

MS. DAVIS: -- in an urban environment, many times they are places of public assembly in a non-structured way. It's something that really has a very different function than a parking lot.

MR. BENYA: You're talking about something such as an amphitheater, you know --

MS. DAVIS: A gathering space in front of a museum.

MR. BENYA: I would suggest that maybe we haven't dealt with that well enough. That's a very good point.

MS. DAVIS: Thank you.

MR. FLAMM: Thank you.

Brian Maas.

MR. MAAS: Commissioner Pernell and Commissioner Rosenfeld, and consultants, I want to give a special thanks to Gary and Bill for spending some time with me a couple of months ago to talk about the concerns I expressed in my letter earlier this year. I'm here today

representing the California Motor Car Dealers Association. We represent the 1400 franchise new car dealers throughout California.

Our principal concern with the standards is making sure that our customers, employees, and our vehicle inventory is safe and secure. And in going through the standards looking for language that helps us understand what it means in terms of safety and security. And I think I'll take Mr. Benya up on his offer to answer some of those questions offline, because one thing I'm learning, there's a whole lot more about foot candles and other technical terms that I didn't know. And I want to be able to explain to our dealer members exactly what these standards mean in terms of safety and security.

And I've appreciated the openness of the process, and look forward to continue working with you. Thank you.

MR. FLAMM: Thank you.

MR. BENYA: Just a quick comment. We made a major effort since the reports were turned in, and with the workshop this past summer, significant increases in the power allowances and the lighting levels were made specifically in the

area of vehicle sales. And they are, let's put it this way, the values that are in there right now, you can with very ordinary lighting equipment that's commonly used in your industry and in layouts that I've, for many, many dealerships I've looked at, are very standard layouts, no problem. I think once you start testing it, you'll realize that where we're at right now is pretty consistent with what you're doing right now, for the most part.

There are always exceptions. And those exceptions are the ones that will actually be constrained.

MR. MAAS: I just have one follow-up. One of the things I did notice, and I do appreciate, is, for example, on page 77, the exception for controls for outdoor lighting, the cutoff switches at night when folks aren't around. There are exceptions for a health or life safety statute, ordinance or regulation. Obviously, the lighting zones have exceptions to go up or down, depending on what the locals do. I think that flexibility will help.

Our members work with the particular local jurisdiction they're in. If there's an auto

mall or some other concentrated area where there are car dealerships and there may be particular health or safety concerns, they can go to the local government and say, look, we need to make a change here because we've got millions and millions of dollars of inventory, thousands of people coming through here, we've got to have more light. So, yeah, thank you.

MR. FLAMM: Thank you.

COMMISSIONER ROSENFELD: I'd like to ask just a sort of for information question, Jim. Or both of you. I didn't come back from China, but I did drive in from Berkeley this morning. And I left Berkeley at 5:30, which means I got to all these car lots in Fairfield or Vacaville about 6:00 a.m. And they're brilliantly lit. Do you sell a lot of cars at 6:00 a.m.?

MR. MAAS: I haven't been working for the car dealers for too long, but one thing I'm learning is they are probably the best sales people in the world. There are --

(Laughter.)

MR. MAAS: There are dealerships open 24 hours a day. There are folks that come in. Our president this year is, has a Ford dealership in

Norco, which is, I think, in Riverside County. And he says folks are coming in from Orange County after they get home from work at 10:00 p.m., and buying cars. So maybe not at 6:00 a.m., but they're buying them at times you wouldn't expect them to be buying them. But I think --

COMMISSIONER ROSENFELD: Well, I can sort of see up to 1:00 a.m.

MR. MAAS: But I think your point is, part of the reason I think those are illuminated are obviously for sales concern. They want drivers to notice that there are car lots there, so the next time they drive by and they're interested in purchasing a car they'll take the exit and stop by. Part of it is the safety and security, frankly.

COMMISSIONER ROSENFELD: Well, no, actually, seriously, that's the question I was going to ask Jim. What's the difference in level between the standard sales levels and the safe and healthy levels which you're recommending, Jim? Are we going down a factor of two or five, or?

MR. BENYA: No, Commissioner, the, there's, this is going to be really tricky, because specific studies in this category of

facility, to the best of my knowledge, have never been done. If we look at how much light do we need for a security camera to do its job, it can be done for about one-fiftieth of the light level that is typically used to illuminate automobiles for sale. If we look at the amount of light that is necessary for a person to feel secure under virtually any condition, it's about one-tenth the amount of light that we illuminate vehicles for sale.

COMMISSIONER ROSENFELD: Well, that's kind of in the right --

MR. BENYA: Yeah. It's really, the safety and security aspects, the illumination levels are significantly less than the amount of light necessary, according to standards you know, according to IESNA standards and all the studies that we're familiar with.

However, there is that long-term advertising question, and I think that's probably the most legitimate reason why we've not come down very strongly, saying you've got to reduce your light level after sales are over, you know, from, you know, like 50 to five, or something, is because there is the perception, at least in part,

by that industry, that the awareness, the location of the dealership, the vehicles that are for sale at the dealership, and other things are marketed even after the, you know, after the dealership is closed, and even at 6:00 a.m.

MR. FLAMM: Mazi.

MR. SHIRAKH: We got a lot of comments related to safety and security, so we did look at it as much as we could. RP8 has some recommendations for safety and security, and the highest category we could find was about five foot candles. We contacted OSHA and Caltrans. The highway workers working on highways at night, they require five foot candles, with cars driving by at 65 miles. And many up it aa little bit, but give or take.

The type of marketing lighting we're talking about for service stations, car lots, you know, we're talking anywhere from 25 to 75 foot candles. So, I mean, they're way beyond any reasonable safety foot candle level that's -- the only function area where it becomes important is for parking lots, and that's why we've included that new table 133B, to specifically deal with the issues related to parking lots.

COMMISSIONER ROSENFELD: Thank you.

MR. BENYA: Their explanation behind that, Commissioner, is that many municipalities set foot candle levels as municipal requirements, based on the community's perception of how much light is needed for safety and security, and the table Mazi referred to relates to that activity. We see this very often in California cities, that they will pass a municipal ordinance. The municipal ordinance is usually somewhere between one and a half and two and a half foot candles. Not even the five that Mazi referred to a minute ago.

So it's, it's, you know, we're talking about an order of magnitude difference between the lighting for vehicle sales lots that typically occurs, and the need for safety and security, and security being one-tenth or less of vehicle sales lot standards.

COMMISSIONER ROSENFELD: Thank you.

MR. PENNINGTON: One other comment I'd like to make relative to the automobile sales, the way that the proposal works is that there's an allotment that's substantially higher for the frontage row, so the front row out there can be

quite bright. And then the rest of the car lot is significantly less than that, and that's the structure of the standard.

COMMISSIONER ROSENFELD: So, saying we're open for your business.

MS. SHAPIRO: Or look at our shiny cars.

COMMISSIONER ROSENFELD: Come on in before you actually select a car. Right.

MR. BENYA: I might also add that the front row lighting levels are use it or lose it, and the general vehicle lot is a standard allowance, general allowance.

MS. SHAPIRO: That's that outdoor sales frontage?

MR. BENYA: Uh-huh. Correct. Yes, we, that is actually part of the IESNA standards. The IESNA will typically say a parking lot for the vehicles for sale would be 25 foot candles, but the front row would be 50. And since that's, this is all consistent and the current IES standards has published an RP2, which is lighting for merchandising, RP201, which means it's recently published, can be easily met with the values that are here.

MR. FLAMM: Dawn DeGrazio.

MS. DeGRAZIO: Good afternoon. A couple of things. One is on the outdoor lighting. On page 76, towards the bottom, talking about controls for outdoor lighting. It says for lighting a building facade, signs, parking lots, and so forth, an automatic time switch shall be installed that, one, turns off the lights when not needed, and, two, reduces the lighting power and watts by at least 50 percent not exceeding 67 percent. And I'm wondering when that reduction is supposed to take place, if that is at a particular time and it just got left out, or if that's at the discretion of the owner of the property.

MR. FLAMM: Mazi?

MR. SHIRAKH: The operation will be with three conditions could trigger. One would be the owner's discretion. The other one would be in the presence of a local ordinance, if they should require one. And the last one would be in event of another energy crisis, or a Stage Two or Three is issued.

MS. DeGRAZIO: So the purpose of -- I'm sorry. The purpose, then, is just to say that it should, that it has the ability, that you have that, the system has the ability to be controlled

in this way.

MR. SHIRAKH: Precisely.

MS. DeGRAZIO: Okay. My initial reading was that it was supposed to happen on a time, and it wasn't saying when.

And then I have a question, and it might have been covered this morning. If so, just tell me to go away, because I wasn't here.

On page 83, subchapter 5, all over that page we have the term "TDV energy". I have no clue, and it's not in the definitions on page 2. What is TDV?

MR. SHIRAKH: It's basically, it's time dependent valuation, it's --

MS. SHAPIRO: It's defined on page 34.

MR. PENNINGTON: It's also, there's a section on page 37.

MS. DeGRAZIO: Okay. Maybe it should be in the definitions, because when you find something that you don't know what it means, it -- you know what I mean, or if it's like pages away, just as a suggestion.

MS. SHAPIRO: It is in the definitions. Page 34, at the top.

MS. DeGRAZIO: Okay. Right. I'll go

away now.

MS. SHAPIRO: Okay.

COMMISSIONER ROSENFELD: Mazi. Excuse me. You know, she actually has a good point about interpretation of the ability to dim by 50 percent. And you explained it extremely well, but it's not crystal clear this way. I mean, maybe it should actually be said that the reason this is called for is so that the local community can, or the utility can, or whatever.

MR. SHIRAKH: We could do that in the design manual. The standards language is usually very boring, for a reason. And then in the design manual that Gary is going to write, we'll --

(Laughter.)

MR. FLAMM: Okay.

COMMISSIONER PERNELL: Please come forward.

MR. FLAMM: Sir.

MR. JEPSEN: Harold Jepsen, with the Watt Stopper.

As a follow-up to the previous individual, it's just that in the shut-off requirement also, the assumption is that it's done during -- you make a definition between occupancy

and non-occupancy, or after hours. And so I think the same thing would apply here, with the exterior lighting, that that would be the time you would expect the lights to actually go to a reduced level, because in the shut-off requirement it doesn't actually define that, either. It goes through all the parts about defining how it's to be done, and what the override period is, but it doesn't actually jurisdict when the occupancy period is to occur.

So that's just a follow-up comment.

MR. FLAMM: Okay. Anybody else, additional comments. Wonderful.

MS. ENGLISH: Just a --

MS. SHAPIRO: Cheryl, talk real loud.

MR. FLAMM: Cheryl?

MS. ENGLISH: Yes.

MR. FLAMM: You're on.

MS. ENGLISH: Since we're talking about curfews, I outlined this in my letter, but I didn't discuss it earlier. With regard to the curfew criteria, we've again gone back and evaluated commercially available products. There are products for HIB pending that are valid for interior applications, you can warehouse lighting.

Those ballasts can be used in outdoor products, provided that they are installed in the type of housing that would ensure no watt or -- the size of that ballast is larger, has larger core, and it will fit in some outdoor lighting products readily, but it will not fit across the board as the proposed standards are enforced, or are applied.

Therefore, I think that that curfew criteria really needs some careful consideration, because it is not technologically feasible today. There was a lot of discussion about the sign lights that, you know, can we make this happen; yes, we can. Can we do it in a reasonable period of time and can we do it cost effectively; I think those are questions that really have to be addressed with regard to the curfew.

The CEC staff have commented a number of times that the curfew criteria is not going to be enforced, that it's there so that if the state does get to an energy crisis, needs to offload some of the, or shed some of the load, that those things would need to be available. The unfortunate thing is the lack of enforcement's going to create a burden on manufacturers to rush

to develop a full line of products by 2005, that are very significant changes to the existing outdoor product line. So I think that the area of curfew has to be carefully reviewed once again.

MR. PENNINGTON: Probably our use of the word "curfew" early on was a miscommunication. We never had intended to enforce a curfew or have a curfew enforced. We were always thinking about having lighting equipment controls that have the capability of allowing for this kind of reduction to accomplish, to be controlled the way Mazi described it earlier.

It sounds like what you're saying is that there's some types of equipment that you think would be difficult to meet this 50 percent criteria, or infeasible completely, and maybe we need to understand exactly which types of equipment you think that is, and how you think you're constrained.

MS. ENGLISH: Okay. The concern is that as of today there's not equipment that -- available that can step in for outdoor lighting, primarily a function of the ballast. There are a lot of lighting control systems that can sense a signal to cut the power or light bubbles down by

50 percent, but there's a very limited availability of ballasts in the marketplace that can accept that control. There are ballasts used for interior applications, but those ballasts are very large. For those interior applications, what happens is that ballast uses a separate housing above the reflector, and there are no size constraints on that housing.

For an outdoor lighting product, that ballast has to be totally contained in a waterproof enclosure, and in a lot of cases, and I have not done a full survey to understand the details of where it fits and where it can't, but in a lot of cases for outdoor lighting products, that ballast physically will not fit into the current designs of products.

MR. SHIRAKH: If I may, first of all I would like to have the Watt Stopper representative to testify, and before I go there, I'd like to clarify that we're not specifying any specific type of technology. There's a number of, basically the choice of 50 percent reduction is up to the designer. They can do it in a variety of ways, one of which is the step ballast, or step dimming. Could you --

MR. JEPSEN: Harold Jepsen, the Watt Stopper. And Mazi's kind of stealing some of my thunder there, and that is that I think what Nancy's referring to, and she's correct in the fact that in outdoor lighting there is not the same way to reduce a fixture's lighting by 50 percent within a single fixture, generally. We, as a company we have some installations, but they're limited. We don't have a large market demand for that kind of product. We do have that product for indoor lighting. To move it outdoors you do need space in a fixture, and I realize that in the industry it requires that both, that a fixture might have to be larger in size, or you have to mount it in an outdoor enclosure.

But clearly the big point is that we can still achieve 50 percent lighting not by reducing within a single lamp fixture, but by picking every other fixture or zoning it such that you can get a fairly even distribution of 50 percent reduction.

MS. ENGLISH: My comment, number one, yes, the fixture does require more space for a manufacturer to design a large following all of our products in order to accommodate that additional five feet. Most of our products are

designed to minimize the size of the products, because of wind loading.

With regard to turning off every other fixture or every other bulb, I think that presents a serious security issue for the state of California. How many of us would like family members to go into a retail parking lot where they have shut off every other bulb. I think that's going to be a big mistake.

MR. BENYA: This is Jim Benya. Actually, Cheryl, I've designed parking lots where we turn off fixtures in various areas that are well after the close of business, and these areas are not used at that hour. And there is a trend, I have even seen shopping centers designed this way, where a significant number of rows are turned off well after the shopping hours are over.

I really do think that you've raised a very valid point about the technical feasibility of every luminaire being able to be reduced by an equal percentage, and this obviously tells us that there are some projects and some situations in which this won't be possible, and I think we ought to take it under advisement. But just to let everybody know, there's, you know, we're sort of

in the middle of this one, and we are working out the details. It has significant merit, but getting it right is going to take this kind of input. Thanks, Cheryl, for bringing it to our attention.

MR. FLAMM: Okay. Let's try to wrap this up in the next few minutes.

Jack, and then Dawn, you have comments.

MR. MELNYK: Hello, I'm Jack Melnyk, Southern Cal Edison. Title is lead lighting engineer. And exactly pertinent to this subject, by approximately Thanksgiving, or maybe a week after, I'll have a very large parking lot installed with the Watt Stopper high/low equipment, on a lot that's about 2,000 feet long and maybe 200 to 250 feet wide, and every one of the 19 poles and 38 lights will be controlled on a high/low basis, with, you know, easy to install weatherproof enclosures and occupancy sensors surrounding each pole, two sensors controlling each one light.

So, it'll wrap up and down for 17 minutes, and no occupancy. The technology should work perfectly. The next step is to disseminate this as a viable product to the whole industry,

but we're going to demonstrate that in a, you know, real world application, and are doing it right now.

MR. FLAMM: Thank you, Jack.

Dawn. Let's get Dawn's comments, and then --

MS. DeGRAZIO: Okay, this is on page 74. Dawn DeGrazio, Sacramento Municipal Utility District.

Under the controls to reduce lighting, and this is indoors, so we've got everybody back inside again. And I asked if this was covered this morning, and my neighbor said no.

So I'm wondering, in the paragraph it says, multi-level -- this is towards the bottom of paragraph B -- multi-level controls shall have at least one control step that's between 70 percent and 50 percent of designed lighting power and at least one step of minimum light output operating at less than 35 percent of full rated lighting system power. A reasonable, reasonably uniform level of illuminance in an area shall be achieved by any of the following.

Okay. So those two steps make for three lighting levels, correct? And then this is how we

can there uniformly. Number one, dimming; number two, switching alternate lamps and luminaires, alternate luminaires, alternate rows of luminaires. To me those are all two level methods. And then three is switching the middle lamp of three independently of the other lamp, and that gives you the three lighting levels. So it just seemed like number two was a two level lighting method, not a three level lighting method. Because alternate means every other one.

Is my question clear?

MR. FLAMM: I'm looking for a reaction from our consultant. Do you have a comment, Jim?

MR. BENYA: Well, this would be John McHugh's proposal, basically.

MR. FLAMM: Okay.

MR. JEPSEN: Harold Jepsen, the Watt Stopper. I don't know if I can really address it. We, in our letter we also submitted the, the language there seems to imply that we're changing from the regular bi-level standard to something else. But really, the third level is off, and it just doesn't say that, 35 percent, I mean, essentially you have to have an off control to that, and that would comply. And that gives you

three levels, on, off, and 50 percent. And so I just think it's written a little bit confusingly, and it can be made clearer in that area. And that's, our proposals and our recommendation is that it be made a little clearer.

MR. FLAMM: Jim.

MR. BENYA: I believe the intent was actually different than that. It was intended to have a one-thirds, two-thirds, three-thirds lighting level, and whereas we were not the authors, this did not come from the team, this is a PG&E recommendation, you know, we will take it under advisement and try and square this one up a little bit. It's, it's an interesting idea, you know. It's sort of, we challenged ourselves many times when to make the leap up to dimming, you know, as a requirement, because of all of its capabilities. And this gets us ever closer, but it doesn't quite make the full commitment to it.

MR. FLAMM: Well, I think the challenge is we've got zero, one-third, two-thirds, three-thirds. We've also got zero, one-half, two-halves. And we need language that encompasses all of that.

MR. GRAY: Yeah, that particular area is

one that NEMA had extensive comments on, that appear to be sort of out of sync with the current standard version.

MR. PENNINGTON: I must say there is some continuation of trying to improve this language and make it more clear, and trying to get stuff in the right section, and it's not done in this draft.

MR. FLAMM: Okay. Are there any more comments? Okay.

This was a very good workshop. I thank everybody for coming and participating. Everybody on the Webcast, thank you for tuning in. And thank you, Cheryl, for hanging in there all day.

And the Commissioners have any final comments?

COMMISSIONER PERNELL: Not other than thank you for coming and all your input. And as you have heard, staff and the consultants will be taking a lot of that under advisement, and we'll get back to you. Thank you.

MR. FLAMM: Thank you.

(Thereupon, the workshop was adjourned at 4:30 p.m.)

CERTIFICATE OF REPORTER

I, PETER PETTY, an Electronic Reporter, do hereby certify that I am a disinterested person herein; that I recorded the foregoing California Energy Commission Workshop; that it was thereafter transcribed into typewriting.

I further certify that I am not of counsel or attorney for any of the parties to said Workshop, nor in any way interested in the outcome of said Workshop.

IN WITNESS WHEREOF, I have hereunto set my hand this 9th day of December, 2002.